

Colorado Medicine

The Journal of the Colorado State
Medical Society



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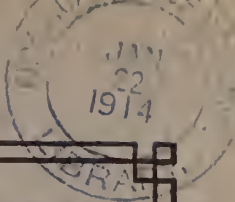
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NO. 1

Editorial Comment

ANNUAL DUES.

Dues are now payable to the secretaries of our constituent societies. It is the duty of the secretaries to send out their bills on January first and to repeat on the first of February and March. On April first the annual reports of the secretaries must be in the hands of the state secretary.

All who have not paid their dues are automatically dropped from the rolls of membership of the State Society, their names removed from the mailing list of Colorado Medicine and these names are then reported to the American Medical Association as no longer being members.

The majority of members who fail to pay their dues during the first two months of each year, do so because of forgetfulness or carelessness. They do not realize that the secretaries are busy men and that promptness in the payment of dues would relieve them of a lot of work and annoyance.

The successful societies are those which do not each year report to the State Society a lot of suspended members.

The amount of the annual assessment of dues is such an insignificant affair that no one is embarrassed by its payment

If you have not paid your dues, do it today.

RUINOUS BUT EFFICIENT.

An Englishman¹ writing upon the troublesome and humiliating subject of fee-splitting, very innocently remarked that in some countries it seems to be understood that if a physician calls in a surgeon to perform an operation the fee for the operation is to be shared. He has never heard of this being done in England, nor is it thinkable to him that the idea has been entertained in any part of that far-reaching empire. From the remarks made by the president at the inaugural meeting of the American College of Surgeons the custom appeared to English eyes as if it were a common one in the United States. It is alleged to flourish in France, but it seems to be too heavily loaded with iniquity to float across the English Channel. As was noted in these comments some time ago, a German writer has coined a name for the practice; "dichotomy" was the word. We may assume that it is not unthinkable in Germany for men to trade in this way. Certainly the practice was not entirely beyond the reach of the German imagination or no medical linguist would have troubled himself to give it a name.

¹Editorial in the British Medical Journal.

The story is told that a physician of high position in Paris was fortunate enough to be patronized by a wealthy patient. The case seemed to demand a very serious surgical operation. A distinguished surgeon in Switzerland was summoned to do the work. The necessity for the operation was agreed upon by the surgeon and the medical attendant. After it had been performed the physician explained to the surgeon that he would expect an even division of the fee. The surgeon was surprised, but gracefully acceded to the demand. He agreed that upon his return home he would render the patient a statement and faithfully and evenly divide the return. He sent a bill for 10 francs and formally transmitted the half of this amount to his French consultant. This method of suppressing the traffic in patients may be efficient, but there is little prospect of the Swiss surgeon finding many imitators in a custom so ruinous.

THE MENACE OF RADIUM.

The New York Sun has called attention to the great danger which lies in the exaggerated reputation of radium as a cure for cancer and to the very limited possibilities of treating many cases of cancer with the available supply of radium. The great demand for treatment with this amazing metal upon the one hand, and the small quantity of it upon the other, offer strong inducements to quackery and deception.

The Sun has favored us with a statement which is greatly above the usual example of medical writing one encounters in newspapers. It might have spared us the humiliation of the charge that we ourselves are responsible for the growing popularity of some worthless nostrums, because we feed with our literary contributions and support with our subscriptions the medical journals that unblush-

ingly advertise such things. We had hoped that the quarrel about medical advertisements might be confined to medical journals. Many newspapers now have a more wholesome concern for the truth of their medical advertisements than those journals to which the physician gives the only sustenance. In such an event we must be prepared for the chagrin of seeing the awful spots on our lingerie exposed to a curious public.

The editorial of the Sun is worth re-publishing and re-reading. Here it is:

Never in the history of quackery have remedies purporting to be compounded upon a scientific basis been exploited with effrontery such as that with which they are now presented to a gullible public by ingenious advertisers. Never before have reputable physicians lent themselves to this species of empiricism to promote the interests of advertisers simply because they exploit their so-called "new remedies" through the medical press. The latter appears to be in the grip of this octopus by reason of profitable returns; in many instances, as we have shown hitherto, the medical newspapers are less careful in investigating the merits of advertised articles than are many lay journals.

So-called radium preparations present the latest manifestation of this tendency. The wonderful action of radium has been the theme of sensational articles in the newspaper press based upon the statements of a few optimistic surgeons whose good fortune has placed them in possession of the precious element. The danger in this unfortunate exploitation arises from two sources, legitimate and illegitimate.

The danger menacing the public from illegitimate practice lies in the glamour surrounding radium, which causes it to be utilized by shrewd manufacturers in the preparation of various mixtures, solutions, powders, etc. These may or may not contain an infinitesimal quantity of radioactivity. There is no protection to the public with regard to the quantity and certainly no knowledge on the part of physicians as to dosage of these proprietary radium preparations. It is a well-known fact, however, that radioactivity is retained in fluid preparations only a few days. Hence no preparation claiming radioactivity is reliable. That such preparations are exploited in reputable medical journals is a painful fact. It presages their abundant use by thoughtless doctors in gout and other diseases in which radium is said to be valuable.

It is highly important that the Board of Health or the national food inspectors should subject these preparations to tests and label them accordingly in order that the public may be warned. In Germany the medical profession is at least protected by the government inspection of all radium derivatives.

In legitimate practice radium doubtless has caused a number of "cures" in cancer much smaller than the number of deaths due to neglect of early operation. If there is anything positive in medicine it is the fact that in the majority of instances of visible or palpable cases of malignant growths a cure is possible only by the earliest possible diagnosis and surgical removal before the neighboring parts are involved. The declaration of the Congress of American Surgeons and its admonition to the public confirm the statement made by the Sun that cancer is more curable than typhoid fever. The trust in radium interferes with early operation, in which alone lies safety. The quantity of radium now in the world is insignificant compared to the enormous number of cases requiring treatment. Moreover, the large outlay of money demanded of surgeons makes it practically impossible to utilize it without similar large outlay on the part of the patient and prevents the surgeon from being as liberal with it as he is with his services. Few patients have the necessary means; many defer treatment until they have saved a sufficient sum, thus losing precious time, each day adding to the fatal prognosis. Its high price excludes radium from eleemosynary practice.

The logical and safe deduction from these facts appears to be for the public to trust to the admonition of the Congress of Surgeons to consult a surgeon for every swelling or growth, whether painful or not, without delay and to submit to its removal, which every conscientious surgeon will advise if it be malignant. Awaiting a possible radium treatment is extremely dangerous. Often superficial cancer has been removed by radium without disfigurement; in these cases it should be applied whenever practicable. The large proportion of cases, however, must continue to call for operation until the supply of radium increases.

DR. LEMEN IN LITERATURE.

In the Semi-Centennial History of the State of Colorado, edited by Jerome C. Smiley, there is a chapter on the Medical Profession of Colorado. This chapter was prepared by Dr. Lewis E. Lemen of Denver and is well worth reading. Dr. Lemen, himself an early pioneer, is abundantly able to write on this subject as he has seen most of the history he has written actually pass before him. Dr. Lemen is a very modest man about his literary efforts and it is probable that he feels that he has not done this chapter of Colorado history justice. As a matter of fact, however, he has done it justice, it is a splendid effort and he is to be congratulated. Those who are not subscribers to this

History of Colorado will find it in the Library of the Medical Society of the City and County of Denver.

PUERPERAL FEVER.

Drs. B. C. Hirst, Philadelphia, R. L. Dickinson, Brooklyn, and J. B. DeLee, Chicago, constituting the committee appointed by the American Medical Association to investigate the subject of the treatment of puerperal fever, publish their report (Journal A. M. A., October 25). They sent out a series of questions to surgeons and gynecologists in this country and abroad, covering the principal exigencies liable to be encountered in puerperal infection, the answers to which are summarized and discussed in the report. These replies to the questionnaire give a definite idea of the practice of the respondents and fairly represent the best prevailing views obtainable, and in forming their conclusions due weight was given them. The conclusions deduced from the inquiry are given as follows: "The majority of accoucheurs and surgeons clean out the septic uterus at once, but a not negligible minority believe it is safe to trust the expulsion of the infected uterine contents to the powers of nature, some assisting the same by mild measures such as antiseptic douches and packing. From this it is fair to infer that, in the majority of cases it has been found safe to invade the infected uterus with finger and curet, and this is borne out by experience. There are, however, many cases in which the infection is of such a nature, or the resistance of the patient of so poor a quality, that the sudden introduction into the system of so large an amount of bacteria and toxins as is always made by curettage, turns the scale against the patient. She cannot stand the inoculation with autogenous vaccines. The experience of the minority has proved that ovular remnants, even though infected in the uterus, do not create such dangerous conditions as we formerly believed, demanding instant removal, but that it is safe to wait for nature to erect her own barrier against the progress of the infections, and that temporizing measures or mildly stimulating ones often suffice for cure. We all feel the need of some method by which it would be possible to distinguish benign from virulent bacteria living in the genitalia, but as yet no such method exists. When it does become possible, our practice will become more definite. At present one-half of the authorities do not try to make the distinction, holding it impractical. One point that was almost invariably emphasized was that after the uterus was once emptied it should not again be invaded by either finger or curet. Few would permit antiseptic douches. This is a very grateful change from the time when repeated curettages were performed on the puerperal uterus—a procedure which was as rational as curetting the throat in diphtheria. Another interesting fact that has developed is that quite generally the tampon is used to stop the bleeding in infected cases. Evidently there is not much fear of damming back the infection and permitting greater absorption."

Original Articles

BLOOD PLATELETS—SOME STUDIES IN CONNECTION WITH ALTI- TUDE AND TUBERCULO- SIS—PRELIMINARY REPORT.*

BY DR. GERALD B. WEBB, DR. G. BURTON
GILBERT AND LEON HAVENS, A.B.

FROM THE LABORATORY OF CRAGMOR
SANATORIUM.

1. BLOOD PLATELETS AND ALTITUDE†

In April, 1909, a preliminary report¹ was published in *Colorado Medicine* calling attention to a new observation in regard to the blood changes due to altitude, namely, an increase in the lymphocyte elements (cells known to be antagonistic to the tubercle bacillus) at the expense of the polymorphonuclear cells.

This observation has been fully corroborated by the work of Stäubli,² and more recently by that of Baer and Engelsmann³ of Davos.

* This work was made possible by the generosity of Mr. and Mrs. B. C. Allen and of Mr. Richard F. Howe of Colorado Springs, to whom we are under great obligations. Our thanks are also due to Dr. Carolyn Rosenberg, Dr. Minnie Staines and Dr. T. L. James for valuable assistance.

† Kemp, in the *Journal A. M. A.*, April 7 and 14, 1906, and in the *American Journal Physiology*, 1902, Vol. V, states that he noticed an enormous increase of blood platelets (in one case) at summit of Pike's Peak, but no figures were given. In Europe Kemp made a similar observation, giving two blood counts on one case, 457,000 in Paris and 1,206,900 in Switzerland at an altitude of 10,290 feet.

The method of counting used is, however, not today acknowledged as sufficiently exact. Neither can we agree as to such enormous increase.

¹Webb and Williams, "Some Immunity Problems in Tuberculosis," *Colorado Medicine*, April, 1909. See also "Some Hematological Studies in Tuberculosis," Webb and Williams; *Transactions of National Association for the Study and Prevention of Tuberculosis*, 1909.

²Stäubli, "Beiträge zur Kenntnis des Einflusses des Hochgebirgsklimas." *Verhandl. des deutschen Kongresses f. im. Med.*, 1910.

³Baer and Engelsmann, "Das Leukocytenbild bei Gesunden und Lungentuberkulosen in Hochgebirge." *Deutschen Archiv für Klinische Medizin*. 112 Band, 1913.

In *Colorado Medicine*, January, 1910, a method⁴ was published by which a similar lymphocytosis could be artificially produced by causing hyperaemia of the marrow of long bones.

In 1912 one of us⁵ called attention to the fact that in blood smears prepared from patients treated with hyperaemia of the bone marrow a large increase of blood platelets was also observed, and it was therefore suggested that altitude would also probably bring about an increase in these elements. The following figures confirm this suspicion.

Fifty Colorado College male students' blood taken at noon. Average blood platelets per cmm., 337,000.

* One hundred Cornell (New York City) male medical students' blood taken at noon. Average blood platelets per cmm., 302,000.

† Mr. H. H. R., Pike's Peak, 14,000 feet, after several months' stay:

October 24, 1913—340,000 blood platelets; 50 per cent lymphocytes.

October 26, 1913—368,000 blood platelets; 56 per cent lymphocytes.

Colorado Springs, 6,000 feet. Returned to this altitude November 1, 1913:

November 19, 1913—324,000 blood platelets; 37.5 per cent lymphocytes

⁴Webb, Williams and Basinger, "Artificial Lymphocytosis, etc.," *Colorado Medicine*, January, 1910. See also *Transactions of National Association for the Study and Prevention of Tuberculosis*, 1910.

⁵Webb, "Studies in Tuberculosis," *Johns Hopkins Hospital Bulletin*, August, 1910.

* Counted for us by Dr. Carolyn Rosenberg, under the direction of Dr. T. W. Hastings of the Cornell Medical School.

Dr. Gilbert and Dr. Rosenberg carefully went over the technic of counting together in New York.

The method employed was that of Wright and Kinnicutt. *Journal of A. M. A.*, May 20, 1911. In every respect this method would seem most reliable and compares in exactness with red and white blood counts.

† The same subject as that used by Dr. Edward F. Schneider in his recent work, "Physiological Observations Following Descent from Pike's Peak to Colorado Springs," *American Journal of Physiology*, October 1, 1913.

November 20, 1913—288.000 blood platelets; 32 per cent lymphocytes.

November 21, 1913—300.000 blood platelets; 39 per cent lymphocytes.

November 22, 1913—272.000 blood platelets; 35 per cent lymphocytes.

2. BLOOD PLATELETS AND TUBERCULOSIS.

For some years it has been a common observation that the blood platelets are increased in tuberculosis, and the following average of counts we have made agree with this:

Normal Guinea Pigs—12 counts average 423.000 blood platelets.

Tuberculous Guinea Pigs—11 counts average 622.000 blood platelets.

Normal Adults—50 counts; 50 normals, average 337.000 blood platelets.

Early Afebrile Tuberculosis—10 counts, 10 patients, average 371.000 blood platelets.

Advanced Quiescent Tuberculosis—11 counts; 11 patients, average 443.000 blood platelets.

Advanced Active Tuberculosis—10 counts; 10 patients, average 488.000 blood platelets.

3. BLOOD PLATELETS AND HYPERAEMIA OF BONE MARROW.

	Platelet Count, Noon.
May 27, 1913.....	372.000
July 17, 1913.....	228.000
July 22, 1913.....	280.000
July 25, 1913.....	332.000
July 26, 1913.....	364.000
July 30, 1913.....	408.000
August 1, 1913.....	308.000
August 7, 1913.....	328.000
November 18, 1913.....	304.000
November 19, 1913.....	338.000
November 21, 1913.....	328.000

December 1, 1913, continuous hyperaemia started on both arms.

	Platelet Count, Noon.
December 2, 1913.....	336.000
December 3, 1913.....	348.000

December 4, 1913.....	368.000
December 5, 1913.....	424.000
December 6, 1913.....	380.000
December 8, 1913.....	400.000
December 10, 1913.....	432.000
December 11, 1913.....	484.000
December 13, 1913.....	428.000
December 15, 1913.....	404.000
December 17, 1913.....	440.000

4. BLOOD PLATELETS AND CARBON MONOXIDE POISONING.

The reason for the blood changes of altitude has been considered to be the lack of oxygen available. In C O poisoning the animal suffers from lack of oxygen, and blood changes similar to those resulting from altitude have been shown in animals suffering from such poisoning, namely, an increase in red corpuscles and an increase in large lymphocytes. The following figures indicate there is also an increase in the blood platelets.

GUINEA PIG C O POISONING.

	Blood Platelets.
December 6, 1913.....	384.000
December 7, 1913.....	360.000
December 8, 1913, 11 a. m.....	404.000
December 8, 1913, 4 p. m.....	456.000
December 9, 1913, 12 noon, 75 cc.	
C O given; 4 p. m.....	488.000
December 10, 1913, 11 a. m.,.....	520.000
12 noon, 100 cc. C O given; 4 p. m.	560.000
December 11, 1913, 11 a. m.....	336.000
December 11, 1913, 12 noon, 100 cc. C O given; 3 p. m.....	440.000
December 11, 1913, 5 p. m., 100 cc. C O given.....	
December 12, 1913, 1 p. m.....	476.000
December 12, 1913, 2 p. m., 100 cc. C O given.....	
December 12, 1913, 5 p. m., 100 cc. C O given.....	520.000

5. BLOOD ELEMENTS AT SEA LEVEL AND AT 6,000 FEET.

	Sea Level.	Colo. Spgs.	Pct. Inc.
Lymphocytes.....	36%	43%	19.3
Haemoglobin.....	100%	110%	10
Red corpuscles.....	5,000,000	6,000,000	20
Platelets.....	302,000	337,000	11.2

It is interesting to note that lymphocytes and red corpuscles increase in the same ratio, which would be expected if they have the same parent marrow cell.

That the haemoglobin and platelets increase also by an equal percentage is curious.

If all these blood changes are brought about by a lack of oxygen it must be for physiologists to explain what functions connected with the gases in the blood the platelets and lymphocytes serve.

6. FUNCTIONS OF BLOOD PLATELETS.

It is conceded that nature rarely operates without a purpose. Callous is not thrown out as a rule unless a bone is broken. In pneumonia we have generally a remarkable increase in the numbers of the polymorphonuclear leucocytes, the reason for which is better understood since Metchnikoff's studies in phagocytosis.

It has been recognized for some time that in several diseases, including tuberculosis, the blood platelets become remarkably increased.

It is reasonable, therefore, to ask why do these elements increase, and do they take any part in immunity phenomena.

The microscope has never revealed their presence in the structure of tubercles, the formation of which is considered an immunity process. But other immune processes are at work in the defense of the organism against the tubercle bacillus, for we know of the production of agglutinin,

opsonin and possibly lysin and other immune bodies.

Now, it is of great interest that Grüber⁶ and Futaki have discovered that in the case of the defense of rats and rabbits against the anthrax bacillus the serum contains strong bactericidal substances only set free after the clotting of the blood.

By adding rabbit's blood platelets to inactivated serum they easily determined that these elements supplied complement which led to the destruction of the anthrax bacilli.

It is natural to ask, then, if nature increases the blood platelets in the victim of tubercle infection, is it for a purpose comparable with that found by Grüber and Futaki in rabbits or rats infected with anthrax?

Metchnikoff has claimed that antibodies, such as opsonins, are set free from leucocytes when these cells disintegrate. It is recognized that serum as opposed to blood plasma is very rich in opsonins, yet the work of Dastre⁷ proves that the white corpuscles are not disintegrated when blood coagulates.

The thought occurred, therefore, can platelets furnish opsonin? The following experiments, several times carefully and thoroughly repeated, certainly suggest that they can.

				Average Bacilli per Cell.		Percentage Empty Cell.		
				Polymorphonu- clears.....	Mononu- clears.....	Polymorphonu- clears.....	Mononu- clears.....	
Leucocytes washed in normal salt solu.	+	Tubercle Bacilli Emulsion in 1.5 salt solu.	+	Blood platelets thoroughly washed 3 times in .8 salt solu...	1.92	2.87	14	10
				Blood platelets heated 1/2 hour at 65° C.....	.92	1.24	34	32
"	+	"	+	Serum unheated..	1.16	1.12	26	24
				Serum heated for 1/2 hour at 55° C. ....	.68	.54	52	54
"	+	"	+	Salt solution .....	.98	1.02	34	38

⁶Grüber and Futaki, "Vorlesungen Über Infection und Immunität," Munich Med. Woch., 1907, No. VI.

⁷Dastre, quoted by Aynaud, "Le Globulin de l'Homme," Annales de l'Institut Pasteur, Jan., 1911.

Similar experiments were carried out with similar results with staphylococci, so that it is not improbable that blood platelets do generally supply opsonins.

The following tests indicate also that vagaries in the opsonic index may be dependent on whether the blood corpuscles used are accompanied by few or many platelets:

CONCLUSIONS.

1. Blood platelets are increased in the

circulating blood at high altitudes.

2. Blood platelets are increased in carbon monoxide poisoning.

3. Blood platelets can be increased by hyperaemia of the marrow of long bones.

4. Blood platelets are usually increased in pulmonary tuberculosis in all stages and in tuberculous guinea pigs.

5. Blood platelets are probably one source of opsonins.

		Average Bacilli per Cell.	Polymorphonu- clear.....	Mononuclears.....	Percentage Empty Cells.	Polymorphonu- clear.....	Mononuclear.....
Lightly centrifuged corpuscles. (Few platelets)	+ T. B. Emulsion in 1.5 salt solu...	.32	.72	72	64		
More thoroughly centrifuged corpuscles (more platelets).....	+ " "	.86	.92	34	36		
Very thoroughly centrifuged corpuscles (many platelets).....	+ " "	.94	.88	26	28		

A PLEA FOR EARLY OPERATION FOR CANCER OF THE LOWER LIP.*

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In discussing the subject of cancer one must necessarily take into consideration our present knowledge concerning its etiology and growth and the various attempts which have been made from time to time to cure the disease or to prevent its dissemination throughout the body.

In spite of the conscientious work of hundreds of trained pathologists and bacteriologists and the multitude of reports which these men have given to the world with regard to the etiology of cancer, the cause of the disease is still unknown. However, as a result of the labor of these observers much data have been given con-

cerning the growth and dissemination of cancer throughout the body.

These data have been of the utmost importance in governing the methods of treatment of cancer and in developing means for its control and cure. The fact that the cause of the disease is unknown has not stopped attempts to cure it or prevented great progress in this direction.

A study of the pathology of cancer indicates that there must be a period in its growth when it is limited to an extremely small group of cells in some part of the body, and while still so confined can be cured by complete removal of this diseased area. We have also learned that cancer is disseminated throughout the body in almost every instance by metastasis along the lymphatic channels which drain the affected area, although there is evidence to show that dissemination may take place through the blood in certain cases. Cancer may also be engrafted from one part of a cancerous subject to another by direct transplantation of the

*Read before the Colorado State Medical Society, Glenwood Springs, October 8, 1913.

cancer-cells, but no instances are on record of a cancer having been transplanted from one subject to another.

In the abdomen cancer-cells appear to become separated from the primary growth and transplanted to other parts of the peritoneal cavity. The early involvement in the pelvis in certain cases of cancer of the stomach can be explained in no other way. The diffuse involvement of the entire abdominal cavity following the rupture of a malignant ovarian cyst is another example of this process. These facts, while important and an aid in curing cancer, do not teach us anything concerning its origin.

Williams, who has written extensively on this subject, believes that chronic irritation has no influence on the production of cancer. Other observers of equal standing believe that chronic or prolonged irritation is one of the important factors in the production of the disease. Cancers originating on the surface of the body never occur except at points subjected to continuous irritation over a considerable length of time. All physicians are familiar with the cancer which develops on a crack or ulcer of the lip, about a mole, a sebaceous cyst, in an ulcer or the scars resulting from burns. There is evidence also to show that cancers inside the body always develop in tissues subjected to prolonged irritation. The stomach, with its acid content and the continuous irritation which it receives from large coarse particles of food as well as the fact that it is nearly always overworked, is one of the most frequent situations for cancer. The large intestine, which also contains coarse dried particles of feces and in addition has a high bacterial content, is frequently the site of the primary lesion. The small intestine, which is always practically empty and when filled contains only liquids of a slightly alkaline or neutral reaction and a comparatively low bac-

terial content, is in direct contrast with the stomach and large intestine relative to the frequency of primary cancer. The one fact which seems to stand out above all others is that factors such as tumors, ulcers, etc., which produce or aid irritation, are often the primary site of cancer.

Cancer seems to be on the increase; if not on the increase, it certainly is true that more cases are being diagnosed than formerly, and larger numbers are being reported to the various health authorities. Because we are in ignorance of the etiology and have no means of preventing the disease certainly does not prevent us from curing it in the early stages. Our only hope lies in the dissemination of knowledge which we have regarding its development and in this way teach the public to come earlier for observation in any suspected case.

Our present knowledge concerning the cure of cancer is relatively as follows: The most enthusiastic internists are willing to admit that there is no medical cure for cancer. Paste containing arsenic is one of the oldest methods of treatment. These pastes have no selective action for cancer, but do have some affinity for pathologic tissues, probably because such tissues contain more water and have less vitality than normal tissues. We know that paste can simply eat out a localized area where it is applied, but cannot possibly have any effect after the growth has left the primary focus.

The Roentgen ray, after years of application in cancer, has not given the results which were hoped for it. It has no direct effect except that it stimulates the formation of fibrous tissue, and in this way delays the growth. Radium is still in the experimental stage as regards treatment. Its effect is probably similar to that of the Roentgen ray. It has no effect on a growth situated on the mucous membrane.

If applied with intelligence in the early stages of cancer, surgery nearly always produces a cure. Late surgery simply de-

ics about the neck is so abundant and guards this area so well that it is only on rare occasions that a metastasis is allowed to occur beyond them. In these cases the patient is aware of a lump, an ulcer or a crack which does not heal, and medical advice is sought. While a correct diagnosis can be made in most instances by observation, the only absolute proof is a microscopic examination by a competent pathologist. Too many cancers of the lower lip are regarded as specific ulcers by the physician and valuable time is sacrificed in trying out the effect of potassium iodid. It should be remembered that a syphilitic ulcer of the lower lip is an extremely rare condition, and that cancer is exceedingly common. Any physician in America, no matter how isolated he may be, can send a specimen to a pathologist and get a telegraphic report within

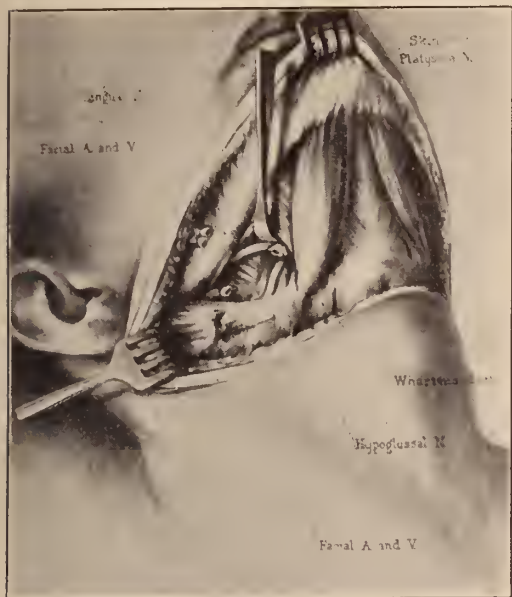


Fig. 1. Dissection of submental and submaxillary triangles for epithelioma of the lower lip

lays. In considering surgery as a treatment, the essence of cure is time, if other factors are equal. The public should be educated in regard to these facts, and it should be impressed upon the people at every opportunity that it is the disease and not the treatment which is dangerous. The danger comes not from operation, but from delayed operation.

In order that cancer may be cured by surgical measures, the lesion must be situated so that an early diagnosis is possible. It must also be situated so that the growth itself can be removed with a wide margin and the lymphatics into which this area drains should be accessible for removal at the primary operation. Cancer of the lower lip is ideally situated to conform to these points. In addition, they are usually slow growing, with but slight tendency to form metastasis in distant parts of the body. The chain of lymphat-

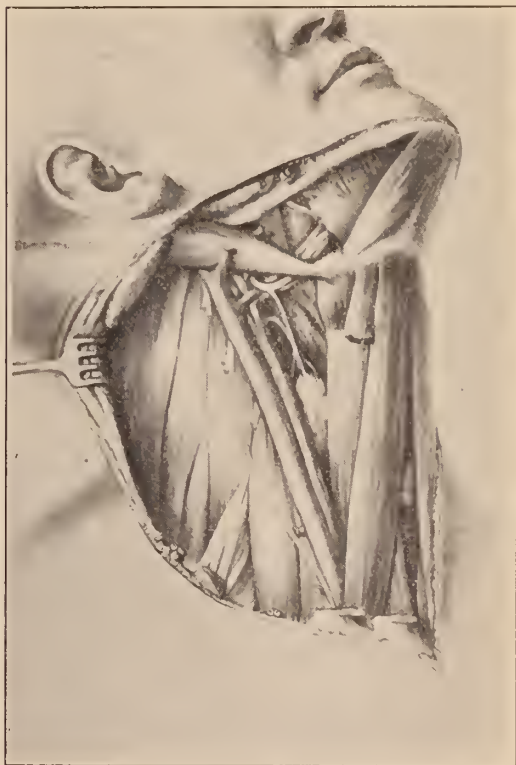


Fig. 2. Block dissection, with removal of sternomastoid muscle, employed when submaxillary glands are carcinomatous.

a few days. Only when we come to realize the importance of an early diagnosis will we appreciate the necessity of a correct pathologic diagnosis. The important factor in these cases is time, and in almost every instance the patient can be cured if the diagnosis is made early. The only cases which are hopeless are those patients who have delayed so long that an operation is no longer advisable.

The area of drainage of the lower lip is so well established and has been so carefully studied by competent observers (Poirier, Cuneo, Küttner) that one knows definitely the lymph nodes which are first affected after the cancer has progressed beyond a local disease. The submental glands, lying in a triangle bounded by the anterior bellies of the digastric muscles and the hyoid bone, drain the central portion of the lower lip. The submaxillary glands, which lie in the submaxillary triangle, bounded by the digastric muscle and the ramus of the lower jaw, drain the remainder of the lower lip as well as the anterior portion of the cheek. These triangles drain the entire lower lip, and if the glands are removed early a complete block between the primary focus of the disease and the remainder of the body is effectually established. It sometimes happens that the submaxillary lymphatics on the side opposite the cancer become involved. While this occurs but rarely, one should remember that when the regular lymphatic channels are blocked, whether by cancer or inflammation, the lymphatic stream may flow in any direction similar to the blood being taken up by the collateral circulation when the main trunk of a vessel is ligated. Thus it is necessary in every case to remove the lymphatics on each side at the primary operation. This should include the submaxillary salivary glands also, not because they become involved by the cancer but because it is impossible thoroughly to remove the lymph

nodes and leave the submaxillary salivary glands.

After the glands from one side have



Fig. 3. Illustrating plastic operation for removal of a portion or the entire lower lip for cancer.

been removed, they should be examined microscopically at once, and if involved with cancer the dissection should be carried down that side of the neck. This is the so-called "block dissection" and is best done by including the sterno-mastoid muscle, which allows better exposure and enables one to do a more thorough dissection. The dissection should include all of the glands and gland-bearing fascia of the entire neck, including the anterior and posterior deep jugular glands. Butlin pointed out the importance of the area underneath the sterno-mastoid muscle and posterior to the submaxillary triangle, actually the posterior part of the submaxillary triangle lying near the mastoid portion of the temporal bone. This is a point at which glandular recurrence following operations for cancer of the lower lip frequently takes place and which may be overlooked in making the dissection.

The principle underlying the cure of cancer of the lower lip is the same as that involving the cure of cancer in any other

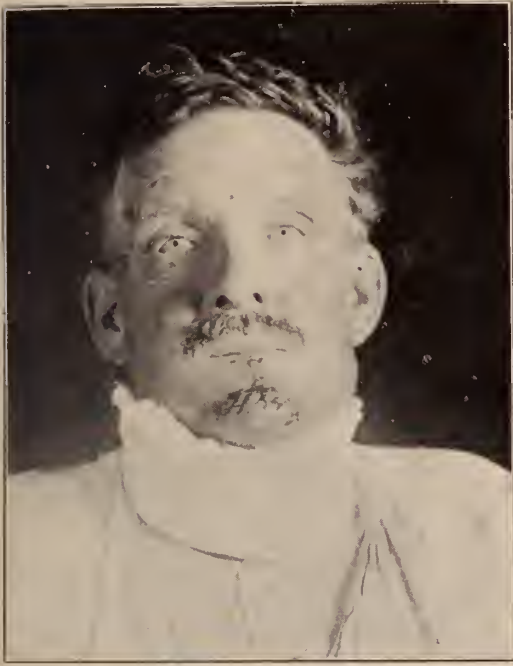


Fig. 4. Patient one week after having had one-half of the lower lip removed for cancer.

part of the body, that is, the primary growth along with the glands into which the area of the growth drains must be thoroughly removed at the earliest stage possible. The medical profession too long have assumed that cancer of the lower lip is not as malignant as cancers in other parts of the body and have contented themselves with conservative measures when radical surgery was imperative. A physician who is not competent to do a thorough dissection of the neck is not fitted to treat a cancer of the lower lip.

There is one differentiation to be made between cancer of the lower lip and cancer in other parts of the body. A cancer of the lower lip is either a local growth or a metastasis in the adjacent glands. I have never observed a cancer occurring in the lymphatic vessels between the original growth and the lymphatics of the neck;

consequently, it does not seem necessary to remove these vessels along with the glands and the primary growth. This is fortunate for both the patient and the surgeon, because it lessens the danger of infection from the mouth into the deep tissues of the neck. The original growth, however, should be removed with a wide margin—the wider the better.

In cases where only the submaxillary and submental regions have been dissected, infection is not of serious consequence, since the mouth may often be entered in these dissections, and also because infection occasionally takes place from the mouth through the cut duct of the submaxillary salivary (Wharton's) gland. In cases where the dissection must extend along the jugular vein to the clavicle, we prefer to perform the operation in two stages, in order to lessen the danger of infecting the entire deep tissue of the neck. The extensive skin flaps which are necessary in the block dissection heal very



Fig. 5. Patient one week after having the entire lower lip removed, and plastic operation as per Fig. 3.

satisfactorily, but if infected from the mouth, the fascia has a tendency to slough and convalescence is delayed materially.

Our customary procedure in operating for cancer of the lower lip is illustrated by Figures 1, 2, 3. An incision is made $\frac{3}{4}$ inch below the ramus of the jaw from one sterno-mastoid muscle to the other. This incision extends through the skin and platysma muscle and is made low in order to avoid the small branch of the facial nerves which swings down below the angle of the jaw and then returns on the face to supply the muscles about the angle of the mouth. When it is necessary to remove only a small portion of the middle of the lip, a better cosmetic result is obtained by saving these branches of the facial nerves. If, however, it is necessary to remove more of the lower lip and widen the mouth by extending into the cheek, it is not necessary to save these nerves. Through this incision the skin and platysma muscle are reflected down to the hyoid bone and up to the inferior maxilla.

All of the fascia and fat, including the submaxillary salivary glands, are removed from the submental and submaxillary triangles. (Fig. 1). It is necessary to ligate both the facial artery and vein, and the blood supply to the face is so abundant through the other branches of the external carotid that sloughing will not occur from this cause. The hypoglossal nerve and the lingual branch of the trifacial are exposed on each side and should be saved. After the removal of the glands this primary incision is closed, drainage being established through small separate incisions on each side. The platysma muscle is stitched first and then the skin with a subcutaneous suture. The wound in the neck is carefully protected and the operation on the lip begun. (Fig. II).

A quadrilateral section, including the

full thickness of the entire lip, is removed, running down nearly to the point of the chin. The section removed should include the growth and from one-fourth to one-half inch on each side into the healthy tissues. The coronary artery should be tied on each side. An incision is then made from the lower angle of the quadrilateral parallel to the ramus of the jaw on either side as far as is necessary to obtain enough tissue to close the defect. The entire flap from which the new lower lip is to be made should be freed well from the bone. These flaps are sutured together in the midline with silkworm gut sutures, the skin being approximated with horse-hair. If the skin remaining over the point of the chin is so long when approximated to the new lip that it produces wrinkles, it is shortened by taking out a small triangle at one or both ends of the incision. This is the technic employed in cases where only a small portion of the lip is removed. (Fig. III). If it is necessary to remove one-half or more of the lower lip, the primary incision is made in precisely the same manner. In addition to the incision running from the lower end of the quadrilateral piece along the ramus of the jaw, it is necessary to make incisions parallel to the former, extending from the corners of the mouth directly into the cheek. These incisions should extend slightly downward rather than upward. The suggestion of J. Clark Stewart to incise through all the tissues except the mucous membrane, then incise one-fourth inch higher and cut through the mucous membrane, is a valuable point in the technic, since it gives plenty of mucous membrane to stitch over the raw surface of the lower lip, and thus prevents contraction of the mouth. When the flaps on each side are thoroughly free, they are approximated as in the former case, the only difference being that the raw surface of the lower

lip must be covered with mucons membrane, as just mentioned. It is now seen that the lower lip is shorter than the up-



Fig. 6. Patient three weeks after removal of the entire lower lip and plastic operation as per Fig. 3.

per, and also shorter than the skin remaining on the chin. These two latter are shortened by removing triangular pieces from the extremity of each incision. This plastic work was taught me by C. H. Mayo, and I have not seen it described in the literature.

From January 1, 1907, to January 1, 1912, there were 199 patients with cancer of the lower lip observed in the Mayo Clinic. This number includes only those patients having a cancer confined to the lower lip or one which had apparently originated in that location.

Twenty-five cases were diagnosed from clinical observation alone; consequently cannot be proved to have had cancer. Two of these had had the local growth removed from the lip before coming to our clinic. From the histories it appeared certain that

the condition had been cancer, and it was thought best to remove the glands. This was done, and both patients are well, without signs of recurrence. Seventeen patients in this series were considered inoperable when first seen. Two others refused operation and four are not accounted for. This makes up the group of twenty-five cases in which we have a clinical diagnosis alone. The remaining 174 cases of proved cancer have both clinical and pathologic findings and form the basis of my report.

One hundred and twenty-six patients had a radical operation performed as the first operation. Ninety-nine of these have been traced; letters have been received from some, others have been examined within the past few weeks. Twenty-seven of the group have not been heard from. Of the ninety-nine patients heard from, eighty-three have no sign of a recurrence either locally or in the glands of the neck. Sixteen have either died of their original trouble or now have a recurrence. Seven of these sixteen patients had glands involved at the time of their operation and three others had an extensive growth on the lip.

Considering only the patients concerning whom we have obtained definite information, that is, the ninety-nine patients from whom we have received letters or who have been examined, eighty-three of whom are cured, we have a percentage of cures following a primary radical operation for cancer of the lower lip of 83.8 per cent. It is interesting to note the time since the operation on these eighty-three patients. Two were operated on one year ago; twenty-five between one and two years; seventeen between two and three years; twenty between three and four years; fifteen between four and five years and four over five years. In eighteen of the above number glandular involvement was demonstrated by the microscope at the time of operation and

nine of these, or 50 per cent, are among the cured.

In another group I have placed twenty-five patients who had a late radical operation; that is, removal of the glands of the neck following one or two local operations on the lip or following treatment by paste. Twenty of these patients have been traced. Fourteen are classified as cured and six as not cured, giving a percentage of 70 per cent of cures of those patients having had a late radical operation, as compared with 83.8 per cent cures of patients having had primary radical operations.

In twelve of the above twenty-five patients glandular involvement was demonstrated by the microscope at the time of the operation; four of these are cured. While this group of twenty-five is much smaller than the previous group, it is interesting to note that when the radical operation was delayed, only a third of the patients having glandular involvement were cured, as compared to 50 per cent of cures in those having glandular involvement following a primary radical operation.

In five of the patients removal of the glands, either as a primary or secondary operation, was incomplete. These pa-

tients have been traced. In this group are cases in which an operation was attempted but abandoned because the involvement was found to be so extensive. It also includes cases in which glands were removed from but one side of the neck, the growth in the lip being confined entirely to one side. Two of these patients are well, with no signs of recurrence.

In a last group, consisting of eighteen cases, we have placed those patients having had an excision of the local growth without the removal of glands. Most of these patients were seen early in the disease, but their general condition or age prevented a radical operation. Fifteen of these have been traced and eleven are cured, giving a percentage of 73.3 cures.

It has been stated by other observers or borne out by statistics that an early operation for cancer, although not a radical one, is often more favorable than a late radical operation. This holds true in the present series, as 73.3 per cent of the patients having an early local excision were cured, as compared with 70 per cent of cures among those who had a radical operation in the late stage of the disease. There were no operative deaths in this series of cases.

CANCER OF THE LOWER LIP.

GROUP.	No. of Cases.	No. Operated.	Traced.	Not Traced.	Cured.	Not Cured.	Inoper- able.	Per Cent Cured.
I. Clinical diagnosis only	25	2	6	19	2	23	17	
II. Primary radical operation	126	126	99	27	83	16	..	83.8
Glands involved....	18	18	18	..	9	9	..	50.0
III. Late radical operation	25	25	20	5	14	6	..	70.0
Glands involved....	12	12	12	0	4	8	..	33½
IV. Glands removed one side or incomplete	5	5	5	0	2	3	..	40.0
V. Local excision only.	18	18	15	3	11	6	..	73.3

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DISCUSSION.

W. W. Grant, Denver: In the early stages of cancer of the lower lip I think Dr. Beckman will concede that the elaborate operation which he makes from the point indicated is unnecessary, but when the cancer is operated upon within eight to ten months you will find only the glands on the same side as the ulcer in the anterior triangle involved, yet it is customary, properly so, even in those cases, to remove the glands on both sides. The submental glands are involved when the ulcer is in the center of the lip, but in any case all recognize the fact that the cure of cancer must be done by a complete operation at a reasonably early period, and when it is not done, frequent recurrence and great mortality will still exist from it. I am very glad to observe that, although not mentioned by Dr. Beckman, he has used the flaps which I described thirteen years ago, and again before the surgical section of the A. M. A. in 1904, at Portland.

I have some reprints here which will show that the flaps, the method of the operation—the incisions beneath the jaw—are exactly as described and illustrated in my paper. It is also shown that the method of getting at the glands is by making the incision as I did. I remove the focus of the infection—the ulcer—first, and then make the flaps and remove the glands in the anterior triangle, which is usually sufficient in early cases. When necessary, as in cases of long standing, to make further examination of the tissues and remove the glands deeper down the neck and around the carotids, it is easy to make the transverse incision beneath the chin, connecting with the lateral and dissect the flap downward.

Of great importance, but not mentioned, is this, it is necessary in getting a good mouth to let the chin tissues remain stationary. This stationary chin flap is essential to a really uniform approximation and fixation of the flaps, so that they will not slide after the operation is done and during the healing process.

That is one objection to the operation recently described in "Binnie's Operative Surgery" as Regnier's operation. It is the old Morgan operation of 1828, in which the whole chin tissues are dissected and slid forward over the chin, in which it will be observed there is no point of fixation. The chin flap will ultimately retract, exposing the incisor teeth and permitting the flow of saliva over the lip. This is the objection, therefore, to all chin flaps. In the operation devised by me there is no scar line above the angle of the mouth. The line by the nose Dr. Beckman used is a needless disfigurement, for the cramped lips can be prevented at the time of the primary operation by taking more tissue from the angles of the mouth a little more from the upper lip. I have described it in the original operation—making the incision slightly downward, in order to conform to the natural condition of the mouth, and beveling the flap from the inner side, in order that you may more readily and easily cover the lip with the flap of mucous membrane. In this operation there is not a place left uncovered by either skin or mucous membrane. In this

method there is no need of grafting, as in most of the other operations.

J. F. Craplow, Salt Lake City: I am delighted to be with you this afternoon and to be invited to speak, although you will recognize that I am not a public speaker. I have listened with great interest and attention to Dr. Beckman's paper on this subject. It is a subject which is of interest to all of us, particularly, I think, from the fact that our attention has now been riveted upon one thing—that the profession in general is just now waking up to the fact that we have been delaying too long our operations for cancer; that the operation is not in itself the thing to be feared, but the delay, rather, is the thing to be feared.

Just one point struck me which I wish to emphasize, and that is the dissection of the neck thoroughly prior to any encroachment upon the jugular cavity, for the sake of safety in the subsequent healing of the neck wounds.

I have used on several occasions the quadrilateral flaps taken from the upper lip along the crease reaching up as far as the alae of the nose, bringing them down across where the lower lip was entirely removed. That has been rather favorable in cosmetic results. I think this is much superior and very much simpler.

I do not want to encroach further upon your time. I thank you.

T. E. Carmody, Denver: There is only one point which I wish to emphasize, as Dr. Beckman has covered the subject very thoroughly, and Dr. Grant, in his discussion, so far as cosmetic results are concerned. But I should like to recommend the use of block dissection in these cases of cancer of the mouth, lip or tongue. The gland at the bifurcation of the common carotid is very frequently overlooked, especially with the old "Z" incision, and the glands Dr. Beckman spoke of, back of the carotid and the jugular, are the ones that are overlooked, and that we do not remove.

Emil H. Beckman, Rochester, Minn: We are all familiar with Dr. Grant's operation for repair of the lip, which gives very good results indeed. I did not mean to say in any way that the operation that I described is the only one that can be used. It is a good one, it is a simple one, and it gives good results, as Dr. Grant's does too. It has this advantage; that you do not enter the mouth and the neck at the same time, and, as I pointed out, that does not seem to be necessary.

What I wish to add to this paper is simply to point out the fact that if these cases were diagnosed early and proper operations performed at an early stage in the disease, I believe that around 98 or 99 per cent of them could be cured.

I failed to mention in speaking that not a single one of these cases that I reported was seen within six months of the time of the commencement of their trouble. It simply illustrates that we are not getting these cases as early as we could. The ordinary procedure of removing the sub-maxillary and sub-lingual glands is sufficient in all early cases, and the block section is reserved only for those cases where the glands in the sub-lingual and sub-

maxillary region are already affected. It should be resorted to for those cases. It certainly is not necessary to do a block dissection of the neck on all these cases, and the one thing that I wish to point out in particular is that while this block dissection looks like a very formidable procedure, and it is a very extensive operation, that there is practically no shock from it. Neck operations do not produce shock in the same way that abdominal operations do, and we have often performed the operation in people over 75 years of age, and on both sides, and we have no hesitancy in doing so where it is necessary.

I think there is still considerable misunderstanding among the profession in regard to the results of operation upon the lip for carcinoma, and the reason I wish to report this series in particular is to show what results can be expected if these cases are operated upon early. There are still some men in the profession who feel that as soon as they see a carcinoma of the lip or face that the patient is doomed, but that certainly is not true.

W. W. Grant: Will you let me ask a question about the X-ray in these cases? Have you not found that the usual X-ray in the endeavor to cure these cases, after they have passed beyond the superficial stage, aggravates the condition?

Emil H. Beckman: I think sometimes the disadvantage of the X-ray is that you never know what it is doing. That is the objection. And the person who applies the X-ray is apt to feel a sense of security that the patient is getting better, and they are very apt to watch the case until it becomes inoperable.

REPORT OF CASE OF NEURITIS FROM CERVICAL RIB; OPERA- TION; RECOVERY.

J. N. HALL, M.D., DENVER.

Miss A., 34 years of age, came to me with a history of pain down the inner side of the right arm. It had persisted for seven months, and many different lines of treatment had been followed, chiefly under the diagnosis of neuralgia and rheumatism.

The pain was always worse after severe muscular exercise, such as she performed in certain varieties of her housework, and led to periods of complete disability. The pain was felt more especially down the course of the right ulnar nerve and in the fourth and fifth fingers. At times it was present above the right clavicle, where a

point of tenderness existed. Numbness and tingling were notable features when not overshadowed by pain.

She is a robust, well-developed woman. The examination was entirely negative, aside from the features relating to the right upper extremity.

Suspecting a neuritis from the pressure of a cervical rib, I first examined the right supra-clavicular region. Pressure showed a point of prominence with the development of pain of precisely the character habitually complained of. Spasm of the muscles of the ulnar side of the forearm resulted from the pressure. No especial sensory disturbances could be made out in the arm or hand. The muscular power was 45 on the right, 65 on the left, as shown by the Tiemann dynamometer. She was right-handed.

The diagnosis of pressure neuritis of the lower or inner cord of the brachial plexus, due to cervical rib, was made. The excellent skiagram taken by Dr. L. L. Patterson demonstrated a cervical rib reaching forward to a union with the first rib, on the right side and a similar but larger rib on the left, although the latter produced no symptoms.

Dr. Leonard Freeman, assisted by Dr. A. J. Campbell, was able to give the patient absolute relief by removal of the anterior portion of the rib (specimen presented).

Cervical rib is not an unusual phenomenon, but none of the several instances which have come under my observation has produced any symptoms. Most of them have been accidentally discovered through the use of the X-Ray in diseases of the neck and chest.

About 90 per cent of the ribs are attached to the last cervical vertebra, and in many cases bilateral ribs exist. A definite articulation with the vertebra may commonly be demonstrated. In general, only those ribs projecting forward and



X-ray plate in which the cervical rib is faintly outlined for the sake of distinctness

downward produce symptoms, for both the sub-clavian artery and the brachial plexus escape in case the rib projects laterally. The artery practically always passes over or in front of the rib, and in certain cases shows as a pulsating, even aneurismal, tumor, above the clavicle. The lower cord of the brachial plexus, derived from the eighth cervical and first dorsal nerves, and from which the ulnar nerve is derived, passes over the rib, being the portion commonly pressed upon either by the cervical rib or its ligamentous attachment to the first rib.

Disturbances of function of the nerves originating from the brachial plexus, especially the ulnar nerve, are the most common results of the malformation we are studying. While pain is far the most serious symptom, in many cases the temperature sense and that of ordinary sen-

sation may be involved. Anesthesia or analgesia may be noted.

The trophic disturbances, which may produce marked muscular atrophy, may be due in part to the interference with the current through the sub-clavian artery, although the trophic nervous influences are much more important. The return of the venous current is seriously compromised in certain cases, cyanosis resulting. Spasm and twitching of the muscles involved are not infrequent. The notable atrophy of the intrinsic hand muscles and those of the forearm are noted only in extreme cases, even a "claw hand" being eventually developed. The last two fingers are always most involved. The muscular atrophy is accentuated by the disuse of the muscles on account of pain in certain cases. Oculo-pupillary symptoms are said to be absent, since the lesion is always peripheral to the sympa-

thetic connection. Absence of the pulse and such interference with the arterial circulation as to result in gangrene are always the result of pressure upon the sub-clavian artery. Marked arterial thrill, and even aneurism, have been reported.

Traumatic neuritis, due to rough handling of the plexus, was formerly much dreaded, but is avoided in the modern operation.

I wish to express my thanks to Dr. L. L. Patterson for the skiagrams, to Dr. Leonard Freeman for the operation and to Dr. A. J. Campbell for much assistance in the study of the case, and at the time of operation.

THE PRESENT STATUS OF RADIUM THERAPY.

JOHN Q. ALLEN, M. D.
MONTROSE.

In preparing this resumé of the subject I have depended mostly upon the writings of Doctors Wickham and Degrais of Paris, and my paper will be, in the main, a review of their works.

That radium has, within the past few years, come to be a therapeutic agent of great importance, to be reckoned with by the medical man, no one will deny. And while the general tone of the investigators above named is of that conservative kind always characteristic of the truly scientific medical man, no one can follow their work without catching the enthusiasm and anticipation of what is in the near future for us along this line.

Radium is an element which in the course of a series of disintegration, consisting of eight or nine stages, emits an enormous amount of energy, similar in some respects

to the x-ray, and the discovery and study of this new element has upset much of the theory of chemistry.

We now hear men of the most acknowledged scientific standing talking about the constituent elements of atoms, when we had been taught that the atom was the ultimate division of any element. Such talk less than twenty years ago would have placed the speaker in the class of the ignoramus. Such are the kaleidoscopic changes of our positive scientific knowledge.

Now by the breaking up of an atom of radium we have added radio-activity to the more familiar forms of energy, such as light, heat and electricity, and we may well believe that these few forms of action are only an infinitesimal part of the energy all about us from the disintegrations of all kinds of matter and elements.

We are justified in thinking that this particular form of energy was discovered because, under certain conditions, like its sister, electricity, it is visible, but who can tell when and by what means others may be discovered?

Radium is rare and expensive, but it may become comparatively common and cheap. It is not so long since Galvani had only enough electricity to move the legs of a frog; now every residence contains enough electricity to do all the cleaning, lighting, heating and cooking.

Radium exists in all of the natural uranium compounds, the more familiar of which are pitchblend or uranium oxide, large deposits of which were formerly found in Bohemia, and carnotite, the vanadate of uranium now found in large quantities in western Colorado.

Radium bromide is the salt in which this element is usually handled. The carbonate, sulphate, nitrate and chloride can be prepared from it.

The new element appears to be a metal of the alkaline earths, akin to barium, and

*Read at the Annual Meeting of the Colorado State Medical Society, Oct. 7, 8, 9, 1913.

its existence has been definitely ascertained by spectroscopic analysis.

As radium disintegrates it gives off energy in the form of infinitely attenuated particles, charged with electricity. They are emitted with extreme velocity similar to light and are called rays.

Three distinct kinds are recognized, called the alpha, beta and gamma rays. A gas called emanation is also liberated. These rays possess biological properties.

If seeds are exposed for a sufficient time to the action of the rays, they will not germinate.

Gamma rays will penetrate the body of a man without revealing the least trace of the skeleton, so that it is not possible to tell when the body comes between the radium and the screen, provided there is sufficient quantity of radium. Hence, the powers of penetration of the radium rays is much greater than the x-rays. Animal tissues are affected and the burn on the body of Professor Becquerél, caused by carrying a tube of radium in his vest pocket, led by accident, as many other important things have been discovered, to the treatment of disease by radium.

These rays are given off in different proportions. The alpha rays are the most numerous, amounting to nine-tenths of the total radiation; the beta rays 9% and the gamma rays 1%.

The different rays also have different powers of penetration, and by placing some substance between the radium and the tissues to be treated, it is possible to intercept or absorb part of the rays. Such a substance is called a screen, lead or aluminum generally being used for that purpose.

In this way it is possible to prevent a burn and also to collect the kind of ray best suited to any particular case. When a strong action of all the rays is required for a short time, no screen is used. However, paper or rubber tissue is used in all cases.

The emanation, or gas given off from radium, is inhaled, mixed with air, or administered in solution, usually with water.

There is no doubt about the medical virtues of many springs being nature's own way of supplying the emanation of radium.

The principal method of applying radium treatment at this time is by means of a metal plaque attached to a suitable handle. Upon the smooth surface of the metal, usually copper, the radium is made to adhere by means of a specially prepared varnish. These applicators are made of different shapes and sizes to suit the parts treated.

When the radium with varnish is spread on linen so that it can be molded to the parts treated, the application is called "toile." Radium is also placed in metal or glass tubes to be inserted into the cavities of the body or into incisions made into tumors.

These instruments are applied for longer or shorter times and with more or less screening interposed, owing to the dosage required. In this way the radiation is varied to suit any case and much care is required to have it properly adjusted so as to get enough of radiation for the case and yet not enough to produce a burn, the same as with the x-ray.

An excellent idea of the technique of radium treatment is shown in the so-called "cross-fire" process, originated by Dr. Wickham in 1905. Where a deep tissue requires a heavy charge and the skin is liable to be burned, two applicators are placed above the diseased part in such a way that the rays going straight out from the surface of the applicator will cross each other in the part intended to be treated. At the point where the rays cross, the effect is just twice what it is on the surface.

As many applicators can be used as the surface will admit, and the effect multiplied accordingly. Some remarkable re-

sults have been obtained in this way in the treatment of deep tumors.

Another very important point in technique is that the lead screens interposed between the radium and the skin not only lessen the amount or quantity of radiation, but the quality of the rays as well, because some rays are easily intercepted by lead, while others penetrate it with little difficulty. In this way we get the terms quantitative and qualitative value of radium, much used in the textbooks on the subject.

This is important, owing to the high price of radium, as one single applicator can be made to serve a great variety of cases, even in the "cross-fire" method of treatment.

A certain reaction takes place after the application of radium, owing to the strength of the salt, the length of time it is applied, or the nature of the tissue penetrated.

It is not always necessary to produce any visible effect in order to gain the beneficial results desired, but when a sufficiently strong dose is used the surface will become red, tender and swollen, accompanied by an itching sensation and covered later by a scab. It is hardly correct to designate this phenomenon as a "burn," because it does not occur until some time after the application, and the effect has been called "radium dermatitis."

If the dose is sufficiently strong, destruction of tissue can be produced, and this is of great benefit in treating certain cases.

But reaction does not necessarily imply destruction, and there may be a strong reaction without destruction or even inflammation. "Reaction is, therefore, the response of the tissues to the disturbance resulting from their penetration by radioactive energy." And the cure of disease by radium is its modifying action upon the histological processes of abnormal tissues.

A peculiar thing in the use of this element is what is called the selective action,

where a specific effect is produced on certain pathological tissues and the normal tissues are not visibly affected.

EPITHELIOMA.

Dr. Wickham commenced his study of radium therapy in March, 1905. He began with epithelioma and his first case was an American lady from Chicago who had been repeatedly treated with the x-rays. The case was cured in three months.

Dr. Wickham, with Dr. Degraais, then took up the most extensive and scientific clinical study with radium that has probably ever been attempted, although Dr. Danlos had been experimenting along the same line since 1900, and a long list of other investigators, prominent among whom is Dr. Robert Abbé of New York, have added much to this new process of treating disease.

In their book entitled *Radium Therapy* Drs. Wickham and Degraais have recorded a large number of typical and characteristic cases, including all the varieties of epithelioma, with many remarkable cures.

CARCINOMA.

The cases recorded of the treatment of carcinoma show much improvement, especially in some inoperable cases, and while it cannot probably be definitely stated at this time that radium is a cure for cancer, much hope is entertained that the new remedy may shortly be entitled to that distinction.

That a combination of surgical operations and radium treatment may be of much benefit in many distressing cases has been demonstrated by these men. From a humanitarian standpoint alone the well established analgesic and styptic effects of radium are worth everything to this class of diseases.

In all cases where x-ray treatment may be considered beneficial, with the object of preventing relapse after a surgical operation, the use of radium is much more convenient, as it can be covered with a sterile

envelope and placed with the dressings directly into or upon the wound.

CHELOIDS.

The selective and specific action of radium is well shown in the treatment of cheloids, as well as the leveling effect which it so often produces upon uneven, abnormal surfaces. Indeed, the results upon cheloids are so universally good and the danger of doing harm so little that these men advise beginners with the use of radium to attack these cases first.

In the work quoted, the authors give statistics from fifty cases of true cheloid without a single relapse.

When we consider the usual refractory nature of cheloids as to surgical and medical treatment, this is certainly a remarkable showing in favor of radium.

In this chapter also many cases of disfiguring scars and cicatricial bands are reported with very gratifying results from an aesthetic standpoint.

ANGIOMATA.

It seems to me that in this field radium has given its best results, especially in a spectacular way. The success in treating so-called birthmarks and vascular naevi, particularly those containing fluctuating erectile tissues, has been striking. These unsightly deformities so often seen about the face have been removed in large numbers. When the naevus is large, with deep infiltration and the color very pronounced, it has not been possible as yet to remove all trace of it, but the improvement has been such that the unfortunate victim has felt free to mingle in society without the dread of attracting attention.

Many cases of the successful treatment in small children of these ugly deformities, dating from birth, are recorded in this work. I will reproduce only two.

I. "*Prominent angioma on tip of nose.* A child, two years of age, had at tip of nose a prominent, purple angioma which was a serious disfigurement. The growth was

double the length of the lobe of the nose, and rather hard and tense. Apparatus No. 9 was applied direct for an hour on three consecutive days. A month afterward the tumor had decreased to one-half its former size. The same apparatus as in the first series, was then used again. After another interval of a month No. 7 was applied. By the sixth month from the commencement of treatment the nose had reached its normal shape, though the skin was rather whiter than normal."

II. "*Angioma of the lower eyelid.* An infant of ten months was sent to us by Dr. Apeet with a deeply colored naevus which occupied the external half of the lower eyelid of the left eye and affected the ciliary margin.

"In order to preserve the eye it was necessary to invert the apparatus, drawing down the eyelid. But since by this means the eye itself was left uncovered, the applications could only be very short. This disadvantage was, however, compensated by their frequency.

"The total duration was two hours, in periods of ten minutes, with apparatus Nos. 7 and 8. A month after this first course of treatment the naevus was reduced by one-quarter. The second series consisted of six applications of ten minutes each. Four months after the commencement of the treatment the child presented in the affected region a flat, smooth and even surface, rather too much discolored. The eye was not involved and there was no retraction."

I give these cases in the author's own words to show the variations in technique which must often be resorted to with the different cases, as well as for the results obtained. They are accompanied by photographs taken before and after treatment, which speak for themselves.

The selective influence of radium upon capillary blood vessels makes it peculiarly suited to this class of cases and the authors

have treated more than five hundred of them, with results similar to those quoted above, and they were of all sizes from a mere spot to those involving one-half of the face.

One great advantage in the treatment of children with radium is the absence of pain or discomfort to the child, and the applications can be made during sleep.

TUBERCULOSIS.

Naturally the class of cases amenable to treatment by radium, where the tubercle bacillus is the cause, must be the more superficial ones, such as tuberculosis of the skin. It has given the best results where used as a destructive agent, the dose being sufficiently strong to kill the tissues, after which the repair has been usually satisfactory.

Lupus has been successfully treated in this way, although the authors advise the use of the cautery first, followed by strong doses of radium.

These diseases furnish an opportunity for the hypodermic injections of a solution of radium. The emination is here made use of and has proved to possess definite bactericidal properties.

GYNAECOLOGY.

In this field radium has also proved of great assistance to the surgeon as well as the physician. Many cases of inoperable carcinoma of the uterus have so yielded to the use of radium that a successful operation could afterwards be performed, and in other cases that had already been operated and recurrences made their appearance from points that had not been thoroughly removed, the use of radium has so supplemented the surgeon's work that the case has been cured. The well established analgesic and hemostatic effects of radium make it an excellent remedy in metritis and some bad cases were cured by the use of it alone.

The use of tubes containing radium and inserted into the womb makes it an easy

and convenient form of treatment in such cases.

LATEST REPORTS.

Since commencing this paper, and within the past thirty days, I have received from the hands of Drs. Wickham and Degraais their latest reports on the subjects considered above. While they still maintain their characteristic conservatism in regard to the cure of cancers, they record cases of years' standing since the treatment was applied and which have not returned. They repeat, and with more emphasis, their former recommendations of the use of radium in connection with surgical interference, before, during and after operations.

They report more than one thousand cases treated, and make the statement that sarcoma responds better and more quickly to radium than does epithelioma.

Among the angiomas they now report more than one thousand cases of port wine stains, including large, deep-colored naevi, which stain the tissues through to the mucous membrane of the cheek and which are generally cured in a very satisfactory way.

Added to these are reports of the successful treatment of various affections, including keloids, acna, eczema, hæmorrhoids and goitre.

MY CASE.

My own personal experience with the use of radium comprises one single case.

Securing access to the use of radium, I began looking around for a suitable subject upon which to try the new remedy and decided upon a case of epithelioma. George Spaulding, of Montrose, Colo., aged 60, in good health, was struck on the left temple by an iron bar twenty-five years ago. An ulcer resulted from this wound and although many kinds of treatment have been resorted to, it has refused to entirely heal during all these years.

Fifteen years ago it was almost healed over but soon broke out afresh and had remained an open, ugly, discharging sore

ever since. When first seen by me it was $\frac{3}{4} \times \frac{1}{2}$ -inch in size, extending back from the outer canthus of the eye.

June 24, 1913, radium was first applied directly over the ulcer for one hour, screened only by sterile gauze and three thicknesses of photographer's paper. A lead sheet, through which an opening the size of the ulcer was cut, protected the healthy tissues around the margin of the ulcer. This was repeated every second day for four treatments and then stopped. During the following two weeks some improvement in the appearance of the ulcer could be noticed and it was becoming smaller. On July 11 the radium was applied for two hours. This was followed by a decided reaction, the itching sensation keeping the patient from sleep during a part of the succeeding night. I was afraid the dose was too heavy and decided to discontinue the treatment for some time. The ulcer, however, continued to heal, and by August 3 was closed down to $\frac{1}{6}$ -inch in diameter.

The final application was then made and left in place for two hours and fifteen minutes. Some reaction followed this application but the ulcer soon afterward healed over entirely.

In all, six applications, occupying in actual time eight hours and fifteen minutes, were required to cure an ulcer with radium that had resisted all other treatment for one quarter of a century.

DISCUSSION.

Moses Collins, Denver: It was not my purpose to discuss the paper, as I am not especially familiar with radium in the treatment of disease. I expected, however, to hear something of an entirely different nature.

While in Berlin last year attending the lectures and clinics at the Charité Hospital, I had the pleasure of hearing a lecture by Professor Theodor Brugsch, on radium therapy. I learned there something that was entirely new to me, and I have been watching medical literature since then, hoping to learn something further of what I had heard at that lecture. Professor Brugsch showed us some quite ingenious apparatus for its use, a number of pills and pellets were shown to be taken internally in the cure for arthritis. I cannot describe the ap-

paratus very well just at the present time, but it regulated the amount of radium energy that was transmitted to the patient, and was used as a method of local application in arthritis, and also in other diseases. I should like very much to know if any of the members present here have any later data or explanation concerning the use of radium in this way?

It was exceedingly interesting to me to know that men of character in medical knowledge, such as these teachers in Berlin, would seriously advise as a class the use of radium internally.

O. M. Gilbert, Boulder: While in Von Noorden's clinic last year I did not see the actual treatment; I was not interested in the technique and did not follow it, but they were using radium therapy principally by means of local application, baths, etc., for chronic arthritis in general—arthritis deformans particularly. It was said to be used with a considerable degree of satisfaction, but in most of the departments they were not very enthusiastic about it. Of course in the radium department they were exceedingly enthusiastic, but the others spoke of it with a considerable degree of reserve. I heard the method of internal administration mentioned, but they did not seem to speak of it with any great confidence there, and I did not see it used.

W. F. Martin, Colorado Springs: Some years ago there was a discussion as to whether the water of mineral springs was more efficacious when imbibed at the springs or whether the water bottled and used at a distance from the springs was as good. It may be of some interest to know that near Colorado Springs we have in the neighboring resort at Manitou a number of mineral springs. Dr. Shedd of Colorado College, some years ago, made some experiments as to the radio activity of these waters. It was clearly shown that the water of the soda springs (and presumably the other springs as well) was radio active at the spring, but that the water steadily lost its radio activity after a few days, entirely disappearing after it was taken in bottles away from the spring. It occurs to me that some of the benefits that people get from going to the springs and drinking the water may actually be due to the condition of the water itself at the springs, which is lost when the water is drunken from bottles at some distance away.

John Q. Allen, Montrose: With regard to the subject brought up by the doctor from Colorado Springs, that confirms my notion of radium emanation, that it is a gas given off. With reference to some springs in the old country, years ago, people were rather superstitious about them and believed that there was a spirit of some kind or an invisible god that came out of the water and healed the cases when they were there, and when the water was taken away from there (as mentioned by the Doctor) the water was not efficacious as a cure, so booths were built about the spring for the purpose of keeping the god in there, so that these people could come and get in the booth and have access to the god of the spring, who would heal them.

As was suggested yesterday, in some cases

people build better than they know. There have recently been thousands and thousands of dollars spent in building these booths and places to keep the emanation in, and there is no doubt about a certain emanation coming from these radio-active waters, and it is kept in, and the patient can stay there and breathe and inhale the gas and get some benefit from it, and when the water is sent away this ema-

nation is lost and the patient gets little benefit from the use of the water.

Regarding the cure of rheumatism, of course, as I stated in my paper, I have taken very largely from the works of Drs. Wickham and Degrais. They do not take up that line very much, but confine themselves in this book to the use of local application of radium. But rheumatism is being treated with apparent success by the use of radium.

EXCERPTS FROM RECENT LITERATURE

THE SURGICAL TREATMENT OF TRAUMATIC ERB'S PARALYSIS IN THE ADULT AND OF BRACHIAL BIRTH PALSY (ERB'S TYPE.)

Taylor (*Ann. of Surg.*, November, 1913, and *Am. Jr. Med. Sc.*, December, 1913) points out the frequency of the above conditions and the ultimate menace to the future utility of the affected extremity unless timely operative interference is instituted. Although in some features the adult cases are the exact counterpart of the birth palsies, nevertheless the essentials in their surgical treatment are about the same and hence are here reviewed jointly.

As to the etiology, both types are due to the forcible wide separation of the head and neck from the corresponding shoulder. The more suddenly the force is applied the more likely are the roots to be torn across instead of simply stretched or frayed. The resulting lesion consists of torn deep cervical fascia, torn nerve sheaths, torn vessels with accompanying blood clot. After a time all of these elements form a dense cicatrix which prevents nerve regeneration and function. As a rule the injury involves the roots in order from above downward. The maximum injury is to the upper roots of the plexus, then as they give way, the next lower roots are torn, and so on until the entire plexus is ruptured. Occasionally the roots are torn from the cord itself.

The symptoms depend upon the situation of the cicatrices and the number of roots involved. The paralyzed muscles fall into groups which correspond with the plexus roots from which they derive their innervation. The sensory symptoms are neither so definite nor so widespread as the motor, and they usually disappear sooner. The completely paralyzed muscles show reaction of degeneration while the less completely paralyzed ones show various degrees of sluggishness to the testing currents. The lesion can always be felt through the skin by the examining finger. In the infantile type interference with growth is always present and is most marked about the shoulder girdle. The deformity usually increases with age.

The prognosis is distinctly bad in either type. Operation promptly instituted gives the best prospect for a useful arm. In adults the only rational treatment consists in prompt exploration with such repair of nerve structures as may be indicated in the individual case. If the split cicatrix does not reveal good bundles above, the only thing left to do is lateral anastomosis of the distal nerve trunk into a neighboring sound root. In those cases where the roots have been torn from the cord, lateral anastomosis is the only thing to be done. In bad cases where nerve bridging is to be done, resection of the middle of the clavicle will greatly facilitate the approximation.

After operation the head and shoulder

must be held in approximation for weeks by a steel brace fitted before operation. Results will never be perfect, but timely operation will give improvement much greater than that obtainable under any other method. It is to be remembered that regeneration requires a very long time and results can not be expected for at least six months after operation.

AMINO-ACIDS IN RECTAL FEEDING.

(Drs. Short and Bywaters in the British Medical Journal, 1913: 2739-1361.)

These physicians have demonstrated that no nitrogenous matter is absorbed from nutrient enemas of milk or eggs peptonized for twenty to thirty minutes. The modern physiological opinion is that proteins are absorbed principally as amino-acids and can be chemically prepared by milk pancreatinized for twenty-four hours.

Deductions were drawn from the examination of the nitrogen output of the urine and whereas regular nutrient enemas gave a low-nitrogen output, amino-acid administration resulted in high nitrogen content. In the case of amino-acids the ammonia nitrogen was low, showing that the high nitrogen output was not due to putrefactive bodies. The rectal washings were not offensive.

Dextrose is much better absorbed than lactose and relieves acidosis due to starvation.

Fat is not well absorbed. Scarcely any of the fat of ordinary milk enemas is retained.

The best nutrient enema consists of milk pancreatinized for twenty-four hours with the addition of 5% pure dextrose.

FORMULA.

To a pint and a half of milk, boiled and cooled, add one-half an ounce of some reliable pancreatic fluid and four pan-

creatic tablets. Keep in the incubator twenty-four hours. Add one-half ounce of pure dextrose. Give $\frac{5}{8}$ V every four hours, or, if patient can retain it, $\frac{5}{8}$ X every eight hours.

MENSTRUAL FEVER IN TUBERCULOSIS.

(Weise. Beitr. Z. Klinik d. Tuberculose. 1913: xxvi-336.)

Dr. Weise offers this as a diagnostic sign of tuberculosis in otherwise non-suspicious cases. He has found that during every menstruation a regular rise of temperature occurs in tubercular women who do not show any other signs or symptom of the disease and that most of the foci become demonstrable in the lung at some subsequent time.

THE USE OF STRYCHNINE IN HEART FAILURE.

(Drs. Parkinson and Rowlands. London Hospital. Cardiac Dept. Quarterly Journal of Medicine, Oct., 1913, page 43.)

CONCLUSIONS.

Subcutaneous injections of full doses of strychnine in cases of heart failure with a regular rhythm give no evidence of any change in blood pressure, rate of pulse, rate of respiration, or general symptoms, within the hour following administration.

In cases of auricular fibrillation full doses of strychnine produce no change in the rate or irregularity of the pulse, rate of respiration or general symptoms. Therefore there is no justification in the use of strychnine as a rapid cardiac stimulant in cases of cardiac failure.

Drs. Parkinson and Rowlands selected fifty cases, twenty-five with regular rhythm, twenty-five with auricular fibrillation.

Apparatus used: Mackenzie's ink

polygraph; Leonard Hill's new mercurial sphygmomanometer.

Drug administered: One-fifteenth gr. strychnine sulphate, subcutaneously injected under skin of left forearm.

Control experiments were carried on with pure water and all factors as to excitement, etc., eliminated.

THE ROLE OF THE STAPHYLOCOCCUS IN GONORRHEA.

(The Journal of Infectious Diseases, July, 1913, page 124. Dr. Warden, Los Angeles, Calif.)

CONCLUSIONS.

(1) Many, if not all of the gram negative intracellular, biscuit or coffee-bean shaped cocci, observed in the purulent discharge in acute gonorrhea and which serve as a criteria of diagnosis, are not gonococci but belong to the staphylococcus group.

(2) True gonococci are demonstrable with difficulty or not at all in smears of gonorrheal exudates or in preparations of tissue.

(3) Gonorrhea may be due to a double infection and dependent on a microbial symbiosis.

(4) Diagnosis of gonorrhea rests on cultural methods only. The old criterion, the microscopic appearance of smears, is unreliable.

The author maintains that in a true gonorrhea no colony of gonococci is so young but that autolysis has begun and may be recognized by variation in size and contour, shadowy outline and faint staining. The staphylococcus does not possess this peculiarity. True virulent gonococci are not readily phagocytal, while staphylococci are readily so.

The staphylococcus urethrae does not lie in the folds and crypts of the urethral canal but is found in the cell interstices and follicles of the glands, and slight abrasion of the mucous surface is necessary to liberate it.

In relation to the gram stain, there is a variability in the staphylococcus. Suspensions of this organism in NaCl solution show no change in a month's time in regard to the gram positive stain, whereas suspensions in gonococcus autolysate, weak pancreatin solution and acities and hydrocele fluids and normal serum, show in progressively shorter periods of time marked gram-negative changes in the still viable cocci.

It is possible to produce gram-negative, biscuit-shaped, intracellular-diplo-staphylococci indistinguishable from the cocci in smears of gonorrheal pus, by the action of serum on the cocci for some hours at 37°, before phagocytosis begins. There seems to be a direct relationship between the biscuit form and the gram-negative state when staphylococci are grown in serum or on media containing certain proportions of serum or hydrocele or acites fluid. Single forms are rarely gram-negative.

Staphylococci in the presence of serum and cells elaborate anaphylatoxic substances, whereas in NaCl solution they do not. Gonococci, always gram-negative, quickly yield toxic substances in NaCl solution.

Gram-negative staphylococci do not undergo autolysis, whereas gonococci do.

Rabbits inoculated intravenously and intraperitoneally with mixed cultures of staphylococcus urethrae and gonococcus perish from doses which given singly exert no ill effect.

Alcohol in small amounts, such as is in beer, exerts a favorable influence on the growth of the staphylococcus urethrae, while the gonococcus has no such predilection this way.

Cultural growths on plates, of staphylococcus urethrae and gonococci grown side by side, show that the staphylococci colonies develop from the individual within the cells and multiply rapidly,

taking on the diplococcal, coffee-bean and gram-negative characteristics.

The gonococci, on the other hand, develop from isolated, extracellular individuals, grow very slowly (one-third the rate of staphylococci) and autolysis begins apparently at once.

The author maintains that gonorrheal pus does not yield pure cultures of gonococci. If such a thing does occur it is an indication of an impending epididymitis or arthritis, because clinically complications of these sorts are generally coincident with a cessation of the purulent discharge and probably due to a fresh focus (auto inoculation), not of gonococci but of staphylococci, as experimentally like condition can be brought about by subcutaneous inoculations of staphylococcus suspensions or vaccine, in a patient suffering from gonorrhea. Such inoculations cause a rapid diminution in the staphylococci in the cultures, so that not infrequently pure cultures of gonococci may be obtained. On the other hand subcutaneous injections of gonococci produce no such effect.

The compliment fixation test for gonococci corresponds with the time at which the gonococci disappears from the cultures. This is also true of the staphylococcus, but the latter remains after the gonococcus has disappeared.

Cases of chronic prostatitis and protracted arthritis, which give negative gonococcus reactions, give strong positive staphylococcus reaction.

A woman who always imagined she was ill called in two eminent physicians to have a consultation. After they had seen and questioned her about her symptoms etc., they retired to the library to talk the case over.

The woman called her sister and told her to go and listen at the door to hear what they said, and this is what was heard:

The first doctor said: "Well, what do you think of her?"

"I think she's the ugliest woman I've ever seen."

"Oh," said the other doctor, "wait till you see her sister!"—Tit-Bits.

News Notes

NEWS NOTES.

At the special meeting of the Medical Society of the City and County of Denver, held on December 12, Dr. J. George Adami delivered an address on "Intestinal Stasis," in which he criticised the views and practices of Sir Arbuthnot Lane. The address has been furnished to Colorado Medicine and will appear in an early number. Although travel was greatly interfered with on account of the snow, a good many physicians from outside Denver were present at the meeting to hear this notable address. There were in all about 175 physicians present.

John D. Alkire has filed suit in the District Court of Denver against the American Medical Association and George H. Simmons, Philip Marvel, Philip Mills Jones, W. T. Sarles, M. L. Harris, Thomas McDavitt, W. T. Councilman, W. W. Grant, Frank Lutz and Oscar Dowling to recover \$100,000 for the publication of an article in a magazine published by the association, which Alkire asserts was a defamation of his character.

Alkire asserts that the persons he names are the editors and trustees of the association and are responsible to him for damaging his character. The publication grew out of a cancer cure which was advertised by the International Skin and Cancer Institute, of which the article names Alkire as manager. The publication asserts that the advertisement is the "most cruel fake" that has been sprung upon the public for many years.

Alkire asserts that he has lived in Denver for twenty-five years and has always borne a good reputation and that the article in question has damaged him in the sum named. He also asks that a body judgment be given against the defendants that they may be sent to jail in default of payment of any judgment which he may obtain against them.

Dr. W. H. Campbell of Pueblo had a narrow escape from serious injury recently when his automobile skidded, turned over and rolled down a steep incline. The doctor escaped, fortunately, with a few minor injuries.

Dr. D. H. Coover has gone to California to spend the Christmas vacation with his son near Los Angeles.

Dr. George Blickensderfer, until recently the vice president of the Denver County Society, has been operated upon for duodenal ulcer. Dr. C. B. Lyman performed the operation. Dr. Blickensderfer's recovery seems to be complete, a gratifying result not only to the patient but to his many friends.

Dr. L. G. Crashy, formerly of Ouray, has removed to Denver, and is now associated with Dr. George H. Stover in the X-ray specialty.

A sixty days' tour of the well-known European Surgical clinics is being arranged under the auspices of the Georgia Surgeons' Club, to close with the meeting of the Congress of Surgeons of North America in London the latter part of July, 1914. Representative surgeons

are invited, and may secure details of the trip from the secretary, Dr. R. M. Harbin, Rome, Ga.

Dr. George H. Chapman and wife of Monte Vista have gone to Porto Rico to spend the winter.

Dr. Henry Sewall and wife are in Honolulu for a winter's vacation.

Dr. Samuel Warren Miller, recently an intern at the Hospital of the City and County of Denver and son of Dr. S. W. Miller of Denver, is now serving an internship in the King's County Hospital at Brooklyn, N. Y.

After many years of distinguished service Dr. James H. Baker has resigned from the presidency of the State University. His place has been taken by Dr. Livingstone Ferand of Columbia University. Dr. Ferand has been teaching psychology and anthropology. He is a graduate physician and will probably take great interest in the development of the medical school. On January 3 the medical faculty gave a dinner to the retiring and incoming presidents of the university.

Dr. Pliny H. Perkins of Colorado Springs is seriously ill at St. Francis' Hospital. He is suffering from uremia.

The following invitation greeted the thirsty members of the profession at Colorado Springs: "A Happy New Year.

"Colorado Springs, December 26, 1913.

"My Dear Doctor—We would like to meet you in consultation as to the 'Pathological Possibilities of Punch,' New Year's morning, ten to twelve, third floor, Burns Building. Friedmann, Mayhew, Loomis, Mullin, Magruder, Watt.

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These excellent hosts have surely set a dangerous example. The reports of their reception are so enthusiastic that a similar performance is called for next year.

Drs. Black, Freeman, Hall, Levy and Lyman repeated their New Year's reception this year. The invitations to this function, which blossom in the fertile brain of Dr. Hall, are hardly less enjoyable than the egg-nog which they promise. Here is the latest one. Let it be observed that we don't say "the last one":

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"We therefore invite you to call on New Year's morning, and bring your medical friends with you, that we may all enjoy the 'cure' together. Egg-nog, cigars.

"Ten to twelve a. m., fourth floor Metropolitan Building. Black, Freeman, Hall, Levy, Lyman."

JUVENILE ANATOMY.

Teacher—"What little boy or girl can tell me the home of the swallow?"

John (solemnly)—"Please, teacher, I think it's the stummick."

Constituent Societies

WELD COUNTY.

The regular meeting of the **Weld County Medical Society** was held in the city hall, Greeley, Monday evening, December 1, 1913. Owing to the absence of the president, Vice President O. F. Broman settled himself in the chair.

Routine business being transacted, the annual report of the retiring secretary was read and approved.

Election of officers for the ensuing year was proceeded with, with the following results:

President—George R. Pogue.

Vice President—E. W. Knowles.

Secretary-Treasurer—Charles B. Dyde.

Delegates—C. A. Ringle and J. G. Hughes.

Alternates—J. W. Lehan and O. F. Broman.

The following resolution was introduced by Dr. C. B. Dyde:

"Whereas, Colorado Medicine has invited its readers to offer criticism of a friendly and constructive nature; and,

"Whereas, Weld County Medical Society has for some years had difficulty in maintaining the interest of its outside members, lacking arguments which appealed to them as being profitable and advantageous; therefore, be it

"Resolved, Firstly, That this society favor the taking of such steps as might lead to an honorable union of Colorado Medicine and Denver Medical Times, thus concerting their energy for the production of a larger and better journal;

"Secondly, That this society thinks the time opportune for the officials of the Colorado State Medical Society to offer at the next regular meeting of the State Society some well-defined plan of medical defense such as is in force in other states."

Nothing in the foregoing resolutions shall be construed as an endorsement of the advertising pages or policy of the Denver Medical Times.

The discussion developed the fact that the members considered that the State Society had been singularly slow in taking up matters of importance to the welfare of its individual members, especially those located in the smaller towns. Moved by Dr. Hughes that the resolutions be approved and pushed to a conclusion. Seconded by Dr. Pogue and unanimously passed. Meeting then adjourned.

J. W. LEHAN, Secretary.

CITY AND COUNTY OF DENVER.

The **Medical Society of the City and County of Denver** met December 2, 1913.

The first paper of the evening was by Dr. Henry Sewall, entitled, "Experiments On Some Relations of the Olfactory Apparatus to the Process of Immunity." Dr. Sewall's observations of an apparent relation between asthmatic conditions and certain odors, led him to make investigations as to the part the olfactory apparatus had to play in such conditions.

Experiments were carried on with a long series of guinea-pigs, the operative work being done by Dr. Cuthbert Powell.

The results up to date would show that the olfactory nerves and lobes were of great importance in the production of such conditions.

The second paper was by Dr. P. Hilkovitz, entitled, "Abderhalden's New Conceptions of Metabolisms." Dr. Hilkovitz gave a critical analysis of Abderhalden's work, starting with his original theories regarding proteid metabolism and the development of the work up to its present status, in connection with the serum diagnosis of pregnancy and cancer.

The third paper was by Dr. W. W. Williams, who outlined the laboratory technique used in the pregnancy test.

Dr. C. B. Ingraham spoke briefly of the practical application of this work in obstetrical practice.

Meeting then adjourned.

Present, 70.

MONTROSE COUNTY.

The Montrose County Medical Society held a meeting December 11, 1913, at the office of Dr. S. H. Bell.

A paper was read by Dr. Bell upon the subject of "Methods of Infection," in which he presented in a very complete and up-to-date manner the advances which science has made along this important line in recent years. He considered in careful detail all of the different sources from which contagious diseases may be contracted and then discussed the means by which much sickness and suffering from the source can be prevented.

In the ensuing discussion Dr. F. G. Didrickson, as the city health officer, spoke of the importance of having a proper milk ordinance for Montrose. If such an ordinance, with proper authority behind it, is incorporated in the city laws, infection from typhoid, scarlet fever, etc., which is readily carried in milk may be prevented. The present state health law is inadequate to meet conditions, and this makes it practically impossible to enforce the proper inspection of dairies.

Dr. F. Schermerhorn pointed out that provisions in the proposed charter for the city provide good and simple regulations along the line of public health. The duties of the city health officer are defined clearly and he is given great power in the matter of the prevention of disease. Dr. Schermerhorn also said that if the charter is adopted, the health clause incorporated in it will supersede the present statutory laws of the state. The city can then make health regulations as stringent as it desires and provide for a proper inspection of slaughter houses, dairies, etc.

Dr. Brethouwer, president of the society, gave a short talk on the state laws of Kansas, showing how they are far superior to those of Colorado in their health regulations. He said that in addition to testing for typhoid germs the health officer should examine milk for tubercular germs.

Dr. Schermerhorn then suggested that the

County Society should demand the enforcement of the health laws.

A general discussion followed relative to the opposition which has been offered by a number of people to vaccination and other preventative measures.

Dr. J. Q. Allen read to the society an announcement from the Council of Health and Public Instruction of the American Medical Association in which an offer was made to send a speaker to Montrose to deliver an address on health subjects to the community.

Mr. Ira Monell was appointed recently by the Fortnightly Club to take action in the matter.

CITY AND COUNTY OF DENVER.

The Medical Society of the City and County of Denver met on December 15, 1913.

The applications of Drs. Wm. Finnoff, C. G. McEachern and Jesserson W. Davis were presented and referred to the Board of Censors.

The scientific program was then given, the first number being a report of a case of neuritis from cervical rib; operation, recovery, specimen by Dr. J. M. Hall. In Dr. Hall's case the patient was a domestic, aged 34. She gave a history of pain down the right arm, lasting over a period of seven months and incapacitating her from work during a considerable portion of the time. There was also soreness above the right clavicle.

Dr. Hall made a diagnosis of cervical rib, which was confirmed by Dr. Patterson by means of X-ray plates.

The patient was operated on by Dr. Leonard Freeman, who found double cervical ribs attached to the first rib on the right side. These were removed with complete recovery.

The second paper of the evening was presented by Dr. H. B. Whitney, entitled "Some Recent Cases of Glandular Fever." Dr. Whitney reviewed at some length the literature in connection with this subject and explained in some detail the opinions of different authorities on the subject. He explained that some authors question the acceptance of the disease as a separate entity. Dr. Whitney then gave a record of several cases occurring in his practice and explaining the clinical symptoms by means of which he had made a diagnosis.

The meeting then adjourned.

Present, 50.

COLORADO OPHTHALMOLOGICAL SOCIETY.

The regular meeting of the society was held on December 20, 1913, in the offices of Dr. C. E. Walker, Jacobson building, Denver. Attendance, 21.

Dr. W. A. Sedwick presented a man aged 46 years, who had come on account of pain and loss of vision in the left eye. The ophthalmoscopic examination showed choked disc of 3 D. Wassermann test was negative, and no definite nasal trouble could be found. Probable diagnosis of retro-bulbar neuritis was made. An operation had been done on the nose, and al-

though no disease was found, the swelling of the disc had largely disappeared. But the vision of the right eye was now becoming affected.

Dr. H. W. Aufmwasser presented a case of interstitial keratitis of over one year's duration, in a man of nineteen years. Both parents had died of tuberculosis, and the Wassermann reaction was positive. The right eye had become affected in October, and the left in December, 1912. The right eye was now fairly clear, but in the left the disease was still active. Three doses of salvarsan, as well as vigorous mercurial treatment, had been given.

Dr. W. C. Bane presented a case of bitemporal hemianopsia in a woman of 71 years. There had been no apparent contraction of the fields in an examination made a few years back. She had had a slight paralytic stroke three months ago, but had no present evidence of paralysis.

Dr. G. L. Strader presented a man who had had poor vision since childhood, and both of whose corneas showed pronounced opacity, probably in the corneal substance, and most marked along a broad horizontal band corresponding to the palpebral fissure, but extending to a lesser degree over other parts of the cornea. There was a vague history of an inflammatory condition in early childhood.

Dr. Melville Black presented a boy of nine years who, seven weeks earlier, had been struck in the eye by a blunt arrow, the result being a penetrating wound at the sclero-corneal junction involving the ciliary body and iris. The boy had not been seen until three weeks back, congestion and irritation had persisted in a marked degree, and enucleation had been advised because of sympathetic danger to the other eye.

WILLIAM H. CRISP, Secretary.

Book Reviews

Stammering and Cognate Defects of Speech.

By C. S. Bluemel, 2 vols., G. E. Stechert and Co., New York, London, Leipzig, Paris, 1913.

A sincere, scholarly work that insures for the author, who has recently come into our midst a hearty welcome from professional colleagues. All of volume 1 is devoted to a comprehensive polemic upon the psychology of stammering. The author's original contribution is a theory which advances as the fundamental cause of this speech defect, transient auditory amnesia which affects mental bewilderment, perversion of the verbal image, auto-suggestion giving rise to inhibition of the will and finally, fear. These conditions act as secondary causes of stammering.

The exhaustive critical analysis which is presented, satisfies by its thoroughness. Beyond this however, the author's rigid honesty evolves a condition which, at least as regards the adult stammerer, reminds one of the realism of Russian novelists who faithfully portray social conditions, but for whose betterment they offer not even a solacing panacea. The au-

thor, criticising unfavorably various methods in vogue, because these take no cognizance of transient auditory amnesia as the first cause of stammering, is at the same time himself sceptical as to possible benefit from procedures designed to improve auditory mental images. In spite of a considerable degree of success in this respect claimed by certain authorities, whom he quotes, he concludes that, "it is doubtful whether mental images can be developed to any extent," (Vol. 1, page 177). On the anatomicophysiological side, the author's conclusion that many cases of stammering are the direct result of unduly distended blood vessels which inhibit the auditory image, certainly remains an unproven theory. The causeway that would bind known physiological processes with the birth of an idea, has not yet been reared. Because childhood is the age of plasticity, the author recommends attacking the matter of cure at the inception of the defect. During early years, if the amnesia is severe "the child can be converted from an audito-moteur to an articulo-moteur (i. e. depending in the latter instance upon kinaesthetic memories of articulation). "If the amnesia is not severe" (i. e. if causality depends largely upon previously named secondary causes) "stammering can be generally counteracted." From the foregoing arises the obvious duty of every municipality to institute courses of instruction for stammering children. Volume II, embodies a discussion of contemporaneous systems of treatment. Two general classes, viz: those which regard stammering as the result of anomalous respiration, vocalization or articulation and others which view speech as a unitary function, are recognized. The author finds both inadequate, not only because treatment is directed to combat secondary causes solely, but also, for the reason that often enough these systems have been exploited by notoriously quack methods. Now and then the text here reads like an excerpt from the "Great American Fraud." In contradistinction to institutional methods, simple directions are recorded to aid the stammerer to eliminate the secondary causes of his defect. Furthermore the author believes an intelligent mother can usually accomplish all that is possible to be done for a stammering child if instead of supinely waiting for him to outgrow the difficulty, she will undertake to combat the impediment. A glossary of hard words not confined to medical terms, is appended. The same furnishes additional evidence to some, which is otherwise patent, that the work is intended for the lay public as well as for professional readers. Difficulties which must arise when writing for several groups of persons of varied needs and interests are manifest. Yet the student of any class will appreciate the marshalling of a great mass of related facts, also the pertinent suggestions regarding further investigation of a frequent and often handicapping defect. One may prophesy for the work favorable and merited recognition from those interested in the subject. OETTINGER.

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1918—J. W. Ames, Denver; E. A. Elder, Pueblo.

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Term expires.

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Eastern Colorado	E. D. McGill, Wray
El Paso County, second Wednesday of each month	J. H. Brown, Colorado Springs
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Huerfano County	P. G. Mathews, Walsenburg
Lake County, first and third Thursday of each month	Jas. G. Schall, Leadville
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Las Animas County, first Friday of each month	Ben Beshoar, Trinidad
Mesa County, first Tuesday of each month	H. S. Henderson, Grand Junction
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Northeast Colorado	N. Eugenia Barney, Sterling
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Editorial Comment

DOCTORS AND DRUG ADDICTIONS.

A bill now pending before the Legislature of New York, which is intended to limit the distribution and use of habit-forming drugs, makes indirect mention of the comparative prevalence of drug habits in the medical profession. It is proposed to deprive any physician of the right to practice who is addicted to any enslaving drug. There is doubtless an undue proportion of drug habitues among physicians. The power for good of narcotic drugs is well known to them. These drugs are always at the physician's command, if not in his medicine case. Under their soothing and care-dispensing influence, fear of their great danger disappears, and thus the physician becomes an easy prey to the seductive charms of opium and its congeners. The Colorado Medical Practice Act gives authority to the State Board of Medical Examiners to revoke a license for habitual intemperance in the use of ardent spirits, narcotics or stimulants to such an extent as to incapacitate one for the performance of professional duties. This rule is often invoked in its application to those who seek a license, but rarely as a ground for revocation.

It has been argued in the New York

Legislature that the detection of drug habits requires skilled observation, and that no physician would appear against another. The Colorado experience would support this contention. While the State Board of Medical Examiners would not admit a drug habitue to practice in this state, it would be loath to deprive one, already here, of livelihood by revoking his license.

EXAMINATIONS.

The plan of testing competency by examinations is the steadfast reliance of the teacher. It is a convenient and a fairly accurate way of determining the amount of information a student has gathered from a limited course of instruction. As interest varies, being deep in some things, but light and transient when directed to others, the examination is a poor means as a test of actual capacity.

Until recently very little was known of Mendel because his work in the laws of heredity had not attracted popular attention. He was an active scientist of very original mind. Mendel was one of the many great men who were the victims of the examination test for intelligence and learning. He was poor—wretchedly poor. A theological institution at Bruenn was the only apparent refuge from pressing

want. Mendel entered it and began those routine studies which rest upon authority. Nothing could have been more unsuited to his character. He was inquisitive, observant and patient in awaiting the answers to the hard questions which he put to nature. Ready-made doctrine could not have been attractive to him. By nature he was a maker of theory, but was not to be made by it. When his theological studies were over he found himself poorly adapted to parochial duties and tried to qualify as an instructor in the gymnasium. The examination by which his abilities were tried did not consider, of course, the original disposition of his mind. It touched only upon trite facts that might have been learned in the closet. Mendel failed in every branch. At this solemn time, when hunger threatened again, a prelate of the seminary at Bruenn sent him to Vienna as a special student at the university. Here his hard experience with examinations was repeated. He retreated finally to the theological institution that had before furnished him welcome asylum and uncongenial instruction. There, in a gardener's hut, he closed the musty classics of the school and opened the large but mysterious book of nature. Experimenting with the growth of peas, he discovered the laws of heredity, which are beginning to play so large a part in the thought of the day.

Charles Darwin is another illustration of the student who could never become adapted to the prescribed studies of the school. He considered his life at Cambridge a futile expenditure of time. By diligence at the ninth hour he managed to gather enough of the ancient classics to pass his examinations. This quickly acquired facility with ancient tongues passed as rapidly away and contributed nothing to mental development and nothing enduring to his store of knowledge.

One teacher only breathed the breath

of life into his instruction. It was Henslow, who took his botany lessons on excursions into the woods and on barges down the river to gather rare plants from oozy banks. Of books he liked Sir John Herschel's "Introduction to the Study of Natural Sciences" and Humboldt's "Personal Narrative." For language, mathematics, history and didactic lectures upon science he found no attachment. Examinations never revealed Darwin's genius. He stood no better than tenth in his classes at school. When opportunity released his talents he stood first among the scientists of the world.

Sir William Osler¹ has severely criticised the English system of examinations, and has since added to his remarks that the need of American examinations is a more practical character. He calls the written examination the Chinese system, and contrasts it with the lofty purpose of the Greeks, who insisted that knowledge should not be sought for display, but with perfect disinterestedness.

The new American College of Surgeons promises, after a certain date, to test its prospective members at the examination table. An institution so new, with purpose so worthy, should not restrict its membership by measures which are already falling into decay. Surely it is possible to judge of a surgeon by accomplishment and conduct without resorting to a literary test, at which any student with a tenacious memory might excel. The time is not far removed when our whole plan of trying one's education and abilities is to undergo a thorough revolution. It must, as Osler suggests, be conducted at the bedside rather than at the writing table. It must take into consideration accomplishment rather than acquisition.

¹An address delivered at the opening of the winter session of St. George's Hospital Medical School. The Lancet, October 11.

THE TANGO.

The tango may seem a trifling theme for a medical journal to consider, but that which everybody is said to be doing must find some association with medicine, which spreads so widely over social affairs and considers so carefully their effects upon bodily function. No social indulgence has been more enthusiastically received or more generally tried than the new dances, which bear so many names and appear in so many variations. The denunciations from the pulpit, the frown of the purist and the warnings of medical counsel seem unable to impede the progress of this fad which whirls without interruption into popular favor. Some medical editors have lifted the scarecrow of "sexual neurasthenia" without causing an apparent tremor of fear. Children may be frightened into obedience by the spectre of the "Buggarman," but young people lose their imagination as reason ripens. They will not fear what they are unable to conceive. There is little prospect of their being brought to realize any danger from "sexual neurasthenia," for even to the physician it is but a pedantic name without definite signification. If it is meant that the movements of the new dances suggest objectionable thoughts, it must be replied that each one must be his own judge of such things. No one can foresee what thoughts will arise in another's mind nor in his own, for that matter. The leafless tree in winter might suggest these same objectionable thoughts. Its barrenness might by contrast raise the thought of fertility and that idea might bring in its train all the associated processes by which fertility is proven. Shakespeare, looking out upon the trees smitten by the frosts and shaken by the wind, thought of a church choir. Allowing for the inaccuracies of memory, this was his expression:

"Boughs that beat against the winter wind, worn out choirs where late the sweet birds sang."

It's never within the compass of good judgment for a physician to condemn a custom without good and even evident reason. There is at least apparent cause for praise of almost any custom that adds delightful exercise to social affairs. To make prediction of disaster that does not occur, to offer questionable advice which is sure not to be observed does not exalt a physician in popular esteem.

The story is told that the Pope summoned a pair before him to illustrate the new dances. To his chaste mind there was in them no suggestion of immorality. He judged them purely by the standards of beauty and exertion. They were, he thought, ugly and energetic. If prescribed as penance they would be cruel inflictions. Without other comment, he recommended to the dancers the movement of the "Furlana" from his native Venice.

If medical editors who like to handle subjects of popular concern see physical or mental evil in the new dances let them profit by this wise example and advise that they be prescribed for the reduction of obesity. When pleasures are put to such serious use as the atonement for sin or the treatment of disease they soon lose their popularity.

NO H₂O IN TURKEY.

While Abdul Hamid was still on the throne of Turkey, the president of the American Missionary College at Tarsus sent to New York for a large consignment of text-books. In due time all except the chemistries came safely. At first the president could not find out what was the matter, but finally the commissioner of the port sent for him.

"Christian," he said, sternly, "it is not for you to complain. It is for you to give thanks to Allah that you did not follow your diabolical books into the flames. Here is one copy that we saved for a witness. Not all of its deadly ciphers could we read, but this is plain even to the eye of a babe." Pointing to the symbol H₂O, he read with triumphant air and voice, "Hamid Second is Nothing."—Youth's Companion.

Original Articles

ON CHRONIC INTESTINAL STASIS, "AUTOINTOXICATION" AND SUBINFECTION.*

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Steadily and progressively during the last score or so of years there has developed a tendency to ascribe to derangement of the intestinal tract, the origin of not a few grave disorders, until today we have Sir Arbuthnot Lane¹ recording no less than seventeen more or less outstanding symptoms as directly due to stasis and delayed passage of faecal matter through the lower end of the ileum and the larger bowel, together with eight maladies indirectly due to the same cause, while we are informed that these are merely the more important possible outcomes of stasis. Several others may also be imputed to this cause. It is a portentous roll—a roll so long that we may well call a halt and examine into its details.

Let me, as this is to form the text for my sermon, rapidly recapitulate Lane's conclusions.

LANE'S THESES.

By chronic intestinal stasis, says Sir Arbuthnot, he means that the passage of the contents of the intestinal canal is delayed sufficiently long to result in the production, in the small intestine especially, of an excess of toxic material, and in the absorption into the circulation of a greater quantity of poisonous products than the organs which convert and excrete them are able to deal with. In consequence there exist in the circulation materials which produce degenerative changes in every single tissue of the body and

lower its resisting power to invasion by deleterious organisms.

He ascribes these disturbances primarily to delay of faecal material in the large bowel. This loading of the large bowel tends towards downward displacement and dragging upon the other organs in the abdominal cavity. Along the lines of stress there develop definite membranes; these very membranes by pulling upon the other organs, induce kinks and partial obstructions, and where this obstruction tells upon the small bowel, dilatation occurs above the point of obstruction, with a relative stasis. Thus we find brought about a delayed passage of the contents of the small intestine, as also of the duodenum and the stomach, with resultant infection of these organs and accumulation of deleterious bodies from the stagnating material. He enumerates the following as the symptoms which result directly from the "autointoxication" of chronic intestinal stasis:

1. Loss of fat.
2. Wasting of both voluntary and involuntary muscles.
3. Alteration in the texture and color of the skin, with pigmentation and offensive perspiration.
4. Subnormal temperature, especially affecting the extremities. There is no abrupt line of separation between this condition and Raynaud's disease, of which it would appear to be a stage.
5. Mental conditions of apathy, stupidity or misery, which may become exaggerated to a state of melancholia, or even apparent imbecility, with suicidal tendencies. There may be neuralgic symptoms, neuritis, frequent headache, loss of control over the temper. It is a much more frequent cause of serious crime than is generally imagined.
6. Rheumatic aches and pains in muscles, joints and skin.
7. Atrophy of the thyroid gland.

*An address delivered before the Medical Society of the City and County of Denver, Denver, Colo., December, 1913.

8. Either increased or lowered blood pressure.

9. Degenerative changes in the breasts, especially in the upper and outer zone of the left breast, predisposing to cancer.

10. Prolapse of abdominal organs, partly because of loss of fat, partly because of waste of the muscle fibres. Increased mobility of the kidneys and prolapse and bends of the uterus.

11. Breathlessness on exertion, at times of asthmatic type, due in some cases to distension of the stomach and intestines.

12. Degeneration of heart muscle, with dilatation of left heart and aorta, and arteriosclerotic changes (atheromatous) in the systemic arteries.

13. Renal changes, which are roughly grouped under the term "Bright's disease."

14. Early loss of hair color, with falling out, more especially in those with dark than with red hair.

15. Affections of the pancreas, with chronic induration, inflammation, and finally cancer. Pancreatic diabetes.

16. Infection of the biliary system, cholecystitis, cholelithiasis, cancer, together with many acute and chronic diseases of the liver.

17. Degenerative diseases of the eye.

The indirect changes resulting from the lowered resisting power of the tissues can, says Sir Arbuthnot, hardly be separated abruptly from these more direct changes. Of these the most obvious are:

1. Infection of the gums and pyorrhoea alveolaris.

2. Tuberculous infection, other than that due to direct inoculation (by which I imagine there is meant the lighting up of latent tuberculosis.)

3. Rheumatoid arthritis. This, like tuberculosis, is declared not to develop except in the presence of defective drainage of the gastro-intestinal tract.

4. Infection of the genito-urinary tract, producing nephritis, cystitis, pyelitis, endometritis, salpingitis, etc.

5. Thyroid disorders, such as diffuse enlargement, exophthalmic goitre, adenomatous tumors.

6. Still's disease.

7. Pustular infections of the skin.

8. Infections of the large intestine, several varieties of mucous and ulcerative colitis.

9. Ulcerative endocarditis.

These, says Sir Arbuthnot, are merely a few obvious, typical, indirect results of the autointoxications of chronic intestinal stasis.

And on the occasions when he announced these conclusions, Sir Arbuthnot brought forward seventeen patients and their case reports as evidence that these various conditions can be cured or definitely ameliorated by short circuiting the large intestine, either by actual removal from the caecum to the pelvic colon, or by insertion of the lower end of the ileum into the pelvic colon; by removal of obstructing bands, or again by performance of gastro-jejunostomy to overcome duodenal obstruction.

Today I want to consider, not as a clinician, but as a pathologist, how far we may reasonably accompany Sir Arbuthnot; to what extent his doctrine is to be accepted. For honestly, at first sight these seventeen symptoms, and eight diseases indirectly induced, seem to be a horrible jumble. At first thought their very variety suggests—well—the list of conditions which we may see advertised as successfully cured by the diligent use of sundry quack remedies. An unfriendly critic might even urge that Sir Arbuthnot outbombasts Bombastes; that no quack remedy vaunts itself to treat quite such a wide field as that included between pimples on the face and murder and suicide. Instinctively we are thrown into an atti-

tude of doubt, instinctively we feel that the great surgeon of Guy's Hospital, to whom surgery owes so much, may have fallen a victim to that most dangerous—if it be not the last—infirmity of noble minds—obsession. For it seems to me that the noble mind as distinct from the great mind, possesses a certain quality of generous enthusiasm which, while it is an added virtue, is also a danger; so that its possessor, once he has discovered a truth, in that enthusiasm, inevitably sees applications of that truth in all directions. If it so happens that he has lit upon a fundamental truth, this is a perfectly safe procedure, he may do it with absolute safety; we marvel at his perspicacity and the charge of obsession, if advanced, passes off like water from a duck's back; if his discovery is not a fundamental truth, but only a half-truth, then the same obsession leads him with fatal sureness to some *reductio ad absurdum*; leads him to enumerate as related—and what is more, to be convinced that they are related—matters which to the every-day man not thus wrought up, are obviously unconnected, and capable of a totally different and more natural explanation. And the pitiful part of it all is that small minds and untrained—as we see every day in matters of religion—may be possessed of a like enthusiasm over what are not even half-truths, but merely phantasms of a disordered imagination; and a callous world, heedless of distinctions, judges both orders of men by the same judgment, and cheerfully consigns both to the common pit.

I speak here with all sympathy, for I have been there. I have known what it is in the course of my work to have reveal itself to me what appeared to be a great principle, to find that principle applying itself to and elucidating every phase of my subject, until all my thoughts throughout the day, and in the watches of the

night, hovered around and constantly returned to this one principle and its application, to the virtual exclusion of everything else. Until, frankly, I became frightened at myself, and with a determined effort gave up that line of investigation, turning to routine university work. I had known others, workers in medicine of higher caliber than myself, who had become similarly so filled with their work and its possibilities that, temporarily, it seemed to me, their reason had become somewhat unbalanced. And here is the point: It was about this very matter of intestinal derangements that I thought I saw light. To me also it appeared that they were the cause of many grave conditions; in fact, of so many and so diverse that, as I say, I feared to continue further, lest if I were not obsessed, the world nevertheless would so regard me. That was fourteen years ago, and in the meantime I have largely permitted this particular field to lie fallow. Taking these facts into consideration, I think it will be admitted that I can deal with this subject both sympathetically and, shall I say, with a certain maturity of judgment?

Is Sir Arbuthnot Lane justified in his teaching, or is he the victim of obsession?

"AUTO-INTOXICATION."

For practical purposes the present movement began with Professor Bouchard²—and with a blunder which has shown its fell influence all through these years up to the present moment. The blunder is all the more remarkable as having been perpetrated by a Frenchman, for to the leaders of the French thought, be it in literature, in the sciences, or in medicine—and Bouchard was such a leader—we look for clear logical exposition of their subjects, and particularly for a choice and precise use of words. It was in 1887 that Bouchard's lectures upon autointoxication in disease were published; to him we owe the popularization,

if not the actual introduction of this miserable word auto-intoxication—a word, let me say, that is not miserable in itself, but deserving of condign damnation when wrongly applied, as Bouchard employed it, as a means to cloak our ignorance in a garment of pretended knowledge. For in a most muddle-headed manner among the self-poisonings proper, the poisonings, that is, due to excess or defect of the products of metabolism, to disordered working of the body cells themselves, or due again to the actual disintegration of cells and the products of dissociation of dead tissue, Bouchard not merely included, but laid particular emphasis upon a group of intoxications which by no stretch of the imagination can justifiably be termed self-poisonings. The poisons produced by invading bacteria are of extrinsic origin; of course they are not auto-intoxicants of the body. It is absurd to retort that what Bouchard meant is that when they are produced in our “insides” they become part of ourselves and so auto-intoxicants. As I pointed out many years ago,³ Bouchard had no right to employ any such slipshod convention. For, accurately, the contents of the intestines are not inside—they are outside the body—only that is inside the body which has penetrated through the cellular lining or surface membrane. Poisons, therefore, originating within the alimentary canal, originate outside the body every whit as much as if they had their origin in the vaginal chamber or on the skin. Even if they were derived from the products of cellular excretion into the alimentary canal—from substances not in themselves poisonous, but rendered poisonous by the dissociative activities of bacterial or other external agents—they still would not be auto-intoxicants. Still less are the products of foodstuffs, taken from without, auto-intoxicants, no matter whether these products gain their poi-

sonous properties through the action of the digestive juices or through the putrefactive activities of the intestinal bacteria. Bouchard, however, with sublime heedlessness, endowed all these as inducing auto-intoxication—meat poisoning, typhoid fever, cholera, internal strangulation, were by him all included under auto-intoxications of intestinal origin.

And the result? Well, this blessed word, auto-intoxication, sensu Bouchard, has become a shibboleth; and after the inevitable tendency of frail humanity, we rarely see it employed for the self-poisonings proper; we see it every day, both by those who ought to know better, like Sir Arbuthnot Lane, and yet more often by those who obviously do not know better, as a blanket or omnibus term, to cover all the processes which are not auto-intoxication, processes whether of toxic or infectious natures originating in the alimentary canal. As a consequence the users are blinded to the fact that they are confusing together many processes which for the purposes of clear thinking and progress ought to be carefully kept apart.

The word, in short, should be banished from the vocabulary of all self-respecting medical men.

It is absurd to jumble all these conditions into one common heap; our duty is to recognize and classify each different form, to analyze before we attempt to synthesize.

Herein, speaking as a pathologist, is my main criticism of Sir Arbuthnot Lane's paper. Let us admit that all these symptoms which he enumerates are found to follow intestinal stasis; let us admit that all in his list of diseases are indirectly due to the same condition. He himself will be the first to admit that only a relatively small proportion of the symptoms are present in any given case. In any given case only one or two of the diseases he enumerates indirectly follow the de-

velopment of the condition. The variation is too great to be put down to individual idiosyncrasy. Even if we grant that one and all are relieved by short circuiting, this does not mean that stasis is the essential predisposing factor. To say as Lane at least implies, that without intestinal stasis there would be no generalization of tuberculosis is, it may be urged, to ride one's horse to death. If words have any weight, then the logical result of his teaching is that, for instance, so soon as we diagnose a case of tuberculosis we are to whip out that patient's colon, because forsooth, without intestinal stasis we should have no tuberculosis save that induced by direct inoculation. Here surely is the *reductio ad absurdum* of the half truth. Does the cow with its dozen or more evacuations per diem suffer from intestinal stasis? Does it suffer from displacement of the abdominal viscera due to the assumption of the "all fours" position, and notwithstanding, is it not quite as susceptible to tuberculosis as is man? It would have been within the bounds of moderation to call attention to the fact that where stasis exists in a case of chronic progressive tuberculosis, the general condition of the patient may be so much improved by short circuiting that a definite arrest of the disease occurs. In like manner it is necessary to point out that conditions such as cholelithiasis, cirrhosis of the liver, pancreatic diabetes are indirectly caused by other conditions over and above intestinal stasis.

From another point of view the objection may be raised that Sir Arbuthnot Lane, as pointed out to me by my colleague, Professor Geddes, has not gone far enough; he has not recognized the fons et origo mali. In a long survey of the anatomical relationships of the viscera, Dr. Geddes assures me that constantly where he has encountered Lane's and other bands of like nature, he has found

a lax abdominal wall with more or less atrophy of the recti and other muscles. The prime cause of visceral displacement is lack of due support. To remedy this, rather than to give soft paraffin, should be the first object of preventive medicine and surgery.

As a pathologist two questions present themselves to me—the first, granting that by bismuth meals or other means we discover that there is serious delay in the passage of the contents of the alimentary canal, and that accompanying this delay a certain number of the symptoms described by Lane have made their appearance, is this sufficient ground for operation? The second, what is the relative value of these various symptoms as an indication for operation; or put otherwise, do we know anything definite regarding these symptoms and the way in which they are brought about, and can we utilize that knowledge as a guide in determining our mode of treatment?

In answer to the first, I am inclined to say that provided the fluoroscope demonstrates the existence of kinks and relative obstructions by narrowing of the lumen in any region, operation is to be recommended—operation, that is, to remove the bands causing the kinks or obstructions. No medical treatment can permanently restore the status quo ante; at most, dieting on soft foods and carefully adjusted support of the anterior abdominal wall may palliate the conditions. It is true that as Sir Arbuthnot admits, without such support after operation these bands are liable to form again, but operation gives a greater chance of removing the obstruction than any other means known to us.

I do not like to seem to be blowing my own trumpet, but where another worker affords illustrations which either support or oppose one's own favorite doctrines, it is difficult to be silent. Thus for long

years I have dwelt upon the existence of non-inflammatory fibroses, and what I term stress hypertrophy of the connective tissues, pointing out that the effects of strain as distinct from overstrain are increased development of the tissue subjected to the stress.⁴ Judged by the little reference to this teaching by other pathologists, I have sometimes thought of myself as one crying in the wilderness. Some of you may know that it is in this way that I explain the overgrowth of the intima and adventitia of arteries in arteriosclerotic conditions. Very probably Lane likewise feels that he is a *vox clamans in deserto*. I have to confess ignorance of the error. I have to confess ignorance of the fact that he as an anatomist and surgeon had been proclaiming this doctrine since 1887.⁵ There could be no prettier demonstration of the action of this principle than is afforded by these bands upon which he lays so much emphasis, these evolutionary bands, as he terms them, produced by the pull of the badly supported bowel upon its mesenteric attachments.*

* While saying this I have to confess that I am not wholly convinced that a low form of infection may not play a part in the initiation of these bands. The studies of my colleague, Dr. Archibald—studies extended over a long period, and not yet published, which he permits me to refer to—upon the production and arrest of adhesions in the abdomen of the dog, appear to teach that, however careful the laparotomy, bacteria are constantly to be found in early adhesions; that bacteria pass from the intestine into the peritoneal cavity with comparative ease; that where present locally in any number, and of low virulence, they tend to be destroyed by the inflammation which they set up, so that the fully formed adhesions are sterile. Probably, therefore, such bacteria incite the first formation of plastic adhesions locally, but later, just as in the repair of bone, we find the early cellular and inflammatory callus becoming the matrix in which laminae of true bone are laid down along the lines of stress, so here, the plastic exudate affords the matrix in which once laid down the connective tissue growth may progressively increase along the lines of stress in harmony with the extent of that stress.

ON SHORT-CIRCUITING AND THE FUNCTIONS OF THE COLON.

When, however, it comes to recommending one or other method of cutting the greater part of the colon out of function, I fancy that I represent a considerable number of fairly thoughtful medical men in being opposed to this, save as a last resort. Probably Sir Arbuthnot would protest that this truly is his teaching—it is to be undertaken only after medical and non-operative means have failed—but when he lays down that short-circuiting shows itself preferable to simple division of the bands, we are given indications that he is prepared to short-circuit at short notice, and are made to doubt his surgery. Add to this his reference to the colon as the “common sink” of the body or as a “cesspool,” suggests the estimation in which he holds this portion of our anatomy. This view that the large intestine is a useless encumbrance is based upon no adequate evidence, despite the teaching of Lane (1886), Barclay Smith (1902)⁶ and of Metchnikoff (1903).⁷ One has only to note at autopsy the fluid contents of the lower part of the ileum, and the solid contents of the lower colon to recognize that it is no mere sink, no mere accumulation of effete matter until such time as enough has collected to be forced into the rectum and be discharged.

When we remember that the whole process of digestion is one of conversion of the foodstuffs into a soluble fluid state, we may assure ourselves that the absorption of fluid that occurs in the colon is at the same time an absorption of foodstuffs, while the very concentration of this faecal matter arrests bacterial activity in an extraordinary manner. It is a preventive of the putrefactive changes which originate in the small bowel. If from one-quarter to one-third the total solids of the healthy faeces is composed of bacteria, what is equally striking is that these are nearly all dead. It is an utter fallacy to picture

the contents of the colon, as I fancy most of us are apt to do, as undergoing acute putrefaction. Such putrefaction when it occurs, takes place mainly in the ileum. It is in the small intestine that there is the greatest bacterial proliferation and activity, and there, and not in the colon, we should locate the main absorption of bacterial poisons. Added to this we have clear evidence that the mucosa of the colon is a region of active excretion; we know, for example, that antimony and mercury are discharged from the blood by this path, while the recent studies of Hertz⁸ demonstrate that the ileo-caecal valve does not so much function as a means of preventing regurgitation from the caecum into the ileum as on the contrary, of retaining the fluid chyme in the ileum until, with the taking of food into the stomach, there is a reflex opening of the gate and filling of the caecum, accompanied by peristaltic propulsion of the contents of the upper colon into the sigmoid. As Hertz had previously pointed out, this filling of the sigmoid has a siphon-like action. When the lower limb of the loop becomes full the whole column descends into the rectum, which normally, until this event, has been empty, and it is the pressure of this column of faecal matter upon the pre-anal portion of the rectum that initiates the desire for evacuation or call to evacuate.

As McCrae and I have pointed out elsewhere,⁹ the very arrangement and relationships of the appendix, caecum and colon indicate function. Now, is it quite true that, as with all other organs of the body, there is in the alimentary canal a huge reserve force and margin of safety; but because it has been demonstrated that very little absorption takes place from the stomach and that a man can manage to exist without a stomach, that is no reason to recommend gastrectomy as a popular proceeding, as the proper course to

pursue in chronic dyspepsia, for example, however excellent a measure this might be in cancerous states or obstinate ulceration. We shall soon at this rate have it recommended that as after the climacteric the breasts and uterus are of no possible use, and as more than any other organs they are liable to be the seat of cancer, therefore as a matter of routine these organs be removed between the ages of 40 and 50.

Saying this, I do not wish it to be understood that (leaving out of consideration malignant growths) I recognize no conditions in which ileo-sigmoidostomy is to be recommended. I freely admit that the mechanical effect of retained faeces may induce congestion and inflammation of the mucosa of the colon with altered secretions favoring the growth of bacteria, which in their turn induce a general degeneration of the mucosa with erosion and ulceration of the viscus, and that this colitis if long continued may so alter the mucous membrane that normal function cannot be restored. In such cases the one hope of giving back relative health to the patient lies in colectomy. But with Hale White¹⁰ I would say that it casts a grave reflection upon the medical attendant if a patient be permitted to reach this state. There are more means than one of promoting the action of the large bowel—more means than saline purgatives and vegetable cathartics—more means than Sir Arbuthnot Lane's soft paraffin and mechanical support of the lower abdomen. In fact, I am inclined to think that such passive support is distinctly an erroneous treatment. If my colleague, Professor Geddes, be right, and laxity of the abdominal wall be the prime cause of displacement of the bowels with consequent stasis, then active increase in the muscular tonus, and not passive bolstering up from without, is what is indicated; in short, a course of abdominal massage. Not being

in practice, I speak with some diffidence about these matters of treatment. I recall, however, as from the distant past, that this laxity of the abdominal wall was what I was taught as a main cause of chronic constipation in my student days, and that my old chief, Dr. Morgan of Manchester, in the 'eighties, used to recommend for those who could not afford the services of a professional masseur, that they should beg, borrow or steal a small cannonball and roll it morning and evening for so many minutes over their abdomen. He explained that its very coldness had a tonic effect, and that rolling up the right side and down the left might also duly stimulate the colon to contraction.

In short, while granting freely that Sir Arbuthnot Lane in certain cases has by the removal of a permanently damaged colon given a new lease of life to his patients, converting chronic and progressive invalidism into health and activity, I must at the same time accuse him of false doctrine in his teaching that the colon is merely a "common sink." The danger of this false doctrine is this, that encouraged by Sir Arbuthnot Lane's brilliant advocacy, encouraged to regard the colon as of no account, the immature surgeons of two continents will inaugurate an era of short-circuiting, performing this or the yet graver colectomy for all sorts and conditions of disease in all sorts and conditions of men, women and children, on the smallest possible pretext. It is, I hold, too grave a responsibility to assume, this of starting an epidemic of operative surgery purely upon an empirical basis, on a foundation that is not established upon uncontrovertible fact. For to repeat, those who employ this term "auto-intoxication" do not know what they are talking about; they do not know whether the morbid state originates in the small or the large bowel; they see at most that delayed passage in any part of the alimentary

tract leads to serious symptoms, but whereas if the hand had offended them they would not cut it off until they had employed the latest and best efforts of conservative surgery, with the colon they would have no such scruples.

THE POSITIVE DATA CONCERNING INTESTINAL INTOXICATIONS.

This brings me to the second question referred to some time ago, namely the nature of the processes set up by intestinal stasis. The truth is that we know painfully little that is precise. Take first the matter of intestinal intoxication, of absorption, that is, of deleterious materials developed in the course of intestinal activity. There are, it would seem, three orders of possible toxic substances to be taken into consideration: (1) the products of disintegration of foodstuffs by the digestive juices; (2) the products of disintegration of foodstuffs by bacterial activity, and (3) the ectotoxins discharged by the intestinal bacteria.

As to the first we know this, that the gastric juice splits the proteins into the simpler diffusible peptones and proteoses, the pancreatic juice can act on both proteins and peptones, the succus entericus cannot act on proteins, but can act on peptones and proteoses, splitting them into bodies of the order of polypeptids and amino-acids. Now, peptones, and more especially primary proteoses introduced directly into the tissues are directly toxic.¹¹ The studies upon enteral and parenteral digestion (upon the effects of the introduction of foreign proteins into the gut and into the tissues respectively) have, however, demonstrated that normally in the passage through the intestinal wall these proteoses are either broken down or built up into harmless substances; it is when they gain entrance directly into the tissues that they are dangerous. Nor can it be urged that where the intestine is inflamed or ul-

cerated, bodies of this order gain entrance into the blood and lymph, and so set up the symptoms encountered in chronic constipation; and that because the symptoms of peptone and proteose intoxication are of a totally different type, resembling, in fact, those seen in anaphylactic shock. While laying this down I would point out that there is still lacking any thorough study upon the effects of entry into the system of recurrent minimal doses of bodies of this order. But for the present they cannot be implicated.

It is not a little interesting that as the protein molecule undergoes further disintegration into bodies of the nature of polypeptids and amino-acids, the products, in general, instead of becoming more toxic, became less toxic. There are some exceptions which I shall note shortly, but so far as I can gather, digestion by the gastric and intestinal juices pure and simple, conducted *in vitro*, affords no substance to which we can ascribe any important group of Sir Arbuthnot Lane's series of symptoms.

In like manner the products of carbohydrate and fatty disintegration have so far not been found to yield disturbances resembling any considerable group of Lane's symptoms, or, to my knowledge, even one of the seventeen, unless we here include the wasting that occurs from lack of digestion and absorption of fatty and other foodstuffs.

We must conclude, therefore, that in the light of our present knowledge, it is not the digestive fluids that by their action on the foodstuffs induce Lane's symptoms.

THE PRODUCTS OF BACTERIAL ACTIVITY UPON THE FOODSTUFFS.

With the products of the fermentative and disintegrative activities of the intestinal bacteria the case is somewhat different, but still vague and unsatisfactory. It is well determined that the dif-

ferent bacteria acting upon soluble food-stuffs give rise to different dissociation products, but it cannot be said that the testing of these products, steadily pursued as it has been for the last quarter of a century, has led us very far. Some here may remember the excitement that was raised by Brieger and his ptomaines in the years that immediately followed Bouchard's lectures. Today we rarely hear the word, the conclusion having been reached that these diamins, result of bacterial activity, *e. g.*, putrescin and cadaverin, are produced in such relatively small amounts that they may be neglected. At most there is still some talk regarding one of these possible final products of protein degeneration (but more frequently of lecithin dissociation), namely, cholin and its conversion into its more poisonous ally, neurin. It cannot, however, be said that this has progressed beyond the stage of hypothesis, or that from what we know of the action of neurin that it could be made responsible for more than certain of the nervous and possibly of the muscular disturbances.

Our only positive data are in connection with another series of disintegration products, the results of the disintegration of the aromatic group in the protein molecule—tryptophane and its derivatives, indol, skatol, phenol and cresol. We owe to that devoted physician and pathological chemist of New York, the late Dr. Herter,¹² the determination that indol introduced into the circulation induces some of the striking symptoms which we associate with retention of faeces—headache, mental irritability, muscular fatigue. Although this has not been proved, Vaughan Harley¹³ and others ascribe the melancholia and neurasthenia of chronic constipation to excessive continued absorption of indol, skatol and phenol from the bowel.

But granting that in indol and its al-

lies we have discovered the cause of the predominant set of symptoms in simple constipation, we are met with the following contradictory facts, namely, that indol and skatol are not easily absorbed from the large intestine. Time and again it is possible to obtain abundant indol from the stools when the urine affords scarce a trace of indican; dry scybala, for instance, are often rich in unabsorbed indol. It is now well established that judged by the amount of indican in the urine, it is where obstruction occurs high up in the small intestine with retention and putrefaction of the fluid faeces in that region, that the most indol is absorbed and excreted through the kidneys. It is quite possible that when the fluid contents of the ileum pass into the caecum, and there, by resorption of the fluid, undergo dessication, some indol is taken into the system, but this is not the main source.

Evidently, therefore, if these symptoms are due to the indol group, the colon only plays, in general, a secondary part in their development. We must suppose that a full colon causes retention of fluid faeces in the ileum, and so favors absorption of the indol group, or suggest that while little absorption occurs in the healthy colon, the inflamed mucosa takes up the indol and its allies. Once again we are led to the conclusion that symptoms are directly ascribed to the poor colon which belong elsewhere. I cannot but feel that there is considerable truth in a remark made to me within the last week by Dr. Harvey Cushing. "In seeking to gain a knowledge of the disorders of the alimentary tract we are utilizing the methods of the tunnel borer, and have started at both ends; we have passed now through the stomach to the duodenum at one end, through the rectum to the ileo-caecal valve at the other; we ascribe every digestive disturbance to these parts about which we know something, but in the

meantime the whole length of the small intestine is absolutely unexplored; to it we ascribe nothing."

Evidently we can proceed very little further. My old friend, Professor Woolley of Cincinnati, has been studying the effects of long-continued injections of indol and tyrosin. He and Newburgh¹⁴ have by this means been unable to discover any changes in the glandular organs; no blood vessel changes were observed in any case, either in the indol or the tyrosin series. There was a slight effect upon the adrenals, namely, an increase in the pigmentation of the chromaffin cells of the medulla, together with a relative increase in the size of the cortex. But this was all.

Interesting as it is, the work of Ackermann,¹⁵ Mellanby and Twort¹⁶ and others upon the production from histidin of the toxic beta imidazolyethylamin by putrefactive and intestinal bacteria, cannot as yet be surely co-related with the symptoms due to intestinal stasis. Indeed, as bearing upon the difference between enteral and parenteral digestion, we have the observations of Barger and Dale¹⁷ that "beta i" is easily obtainable from the fresh mucosa of the small intestine removed during life, and this, simply by treatment with alcohol, so that highly toxic as it is, there is evidently a mechanism whereby this substance does not gain entrance as such into the general circulation. At most it may be responsible for the acute death which is apt to follow upon complete duodenal obstruction. As a matter of fact, this work of Herter's and its continuation by Woolley and Newburgh represents the one solid acquirement we have gained in this matter of alimentary intoxication, and you see how doubtfully it can be applied to the colon, and to the development of the more se-

rious states which may accompany grave coprostasis.

BACTERIAL ECTOTOXINS.

We come now to the third form of intoxication, that, namely, by bacterial ectotoxins. It is striking that the intestinal bacilli, par excellence, namely, the members of the *B. coli* group, produce no recognizable ectotoxins; the same is true of the other important group of the streptococci.

If either of these directly caused the symptoms of alimentary intoxication it could only be through bacteriolysis, through breaking down and liberation of their split products. Now in the first place, accepting Vaughan's most thorough work¹¹ these bacterial split proteins cause symptoms similar to those set up by the peptones and proteoses, not those of faecal retention; and in the second, the vast number of bacterial corpses seen in the faeces is contrary to any theory of bacteriolysis; the bacteria have been killed, but have not suffered dissociation* and dissolution.

There are only two recognized invaders of the alimentary tract that produce ectotoxins known to produce intoxicative symptoms when absorbed. These are the rare *B. botulinus*, which by its toxins acts particularly in the nervous system, setting up one form of meat poisoning, and the bacillus pyocyaneus, a not uncommon inhabitant of the ileum and lower bowel, whose toxins act also in the nervous system. So far I think I am right in saying that whenever the characteristic tonic contractions of the muscles have been observed, which are brought about by pyocyaneus toxins, we have had to deal not with a mere intoxication, but with a definite infection by this organism. That, at least, has been our experience in

Montreal. There still is needed a careful study of the anaërobes of the digestive tract which, as Herter pointed out, are apt to be greatly increased in irritative conditions of the lower bowel. By analogy some of these should produce powerful ectotoxins. It does not, however, follow that such ectotoxins if discharged, undergo absorption by the bowel wall.

SUBINFECTION VERSUS INTOXICATION.

Here once again it is evident that there is singularly little evidence of the development of intoxication proper.

When, indeed, we sum up all these known data, we find that they are so mean in amount that irresistibly I find myself inclined to ask "are we nosing along the right scent; may not we be working along the wrong one?" Are there not observations of another order that throw much more light upon Lane's syndrome, with its associated diseases, and at the same time harmonize other observations regarding the onset of the same group of diseases, an onset by no means necessarily related to intestinal stasis.

If I may criticize Sir Arbuthnot Lane's reports upon his cases, I would say that these are not up to date—they are too largely clinical. An important development now-a-days, such as he recommends, demands the fullest coördination with the laboratory; there ought to be routine blood cultures in every case recorded, routine examination and reports upon the stools and their predominant bacterial types, blood counts, haemoglobin examinations—in fact, the full clinical study of each case, so that nothing is neglected. That I say is demanded today; that Sir Arbuthnot does not give us. The surgeon today, no less than the physician, must so arrange his service as to give his patients all these aids to correct diagnosis. What interests us, however, is to note that occasionally in his series of cases Sir Arbuthnot notes that either *B. coli* or strepto-

* Here is another piece of work that deserves doing, namely, to observe whether in prolonged retention of faeces the faecal bacteria exhibit any evidences of lysis.

cocci, or both, were found upon blood culture. The point I want to make is this—that had Sir Arbuthnot instituted fuller preliminary studies he would have recorded this finding in so many of his cases that he would not have spoken of this senseless auto-intoxication, but of low infection as the cause of most of the disturbances he tabulates.

Fourteen years ago I called attention to this matter, bringing forward a considerable body of evidence.¹⁸ I showed both from the studies of others and the investigations of workers in my laboratory, of Ford, Nicholls and others, that not only do the lymph nodes of the respiratory tract and of the alimentary tract of normal animals constantly afford cultures of bacteria, but also that properly prepared organs, such as the liver and kidneys of healthy animals, yield cultures of pathogenic and non-pathogenic bacteria; that through the agency of leucocytes bacteria are constantly being carried into the system and as constantly being destroyed in the healthy animal; that with inflammatory conditions in the alimentary canal, and greater accumulation of leucocytes in its walls there must be greater passage of these from the surface, and more extensive carriage of bacteria into the system. According to the virulence and number of these bacteria, so may there be set up other foci of active infection, or a condition which I termed "subinfection," that is to say, the bacteria thus carried in do not multiply and set up foci of suppuration; they are destroyed, but with their destruction the liberation of their toxins causes a poisoning of the cells immediately around them, and the accumulative action of these toxins, whether locally or at a distance (upon the liver cells, for example) brings about the death of certain cells and replacement by fibrous tissue. In the fourteen years that have elapsed since I brought forward these

ideas upon subinfection, steadily and surely facts have accumulated in support of these views, and the allied view regarding the frequency of latent infection. There has been abundant confirmatory evidence demonstrating that tubercle and other bacilli fed by the mouth to young animals are to be found in the lymph of the thoracic duct in the course of an hour or two. We now know that whether the point of entrance be through the upper respiratory tracts or through the digestive tract, by the eighteenth year 95 per cent of those examined respond to the tuberculo-cutaneous tests, although only 10 per cent die from the disease; in 85 per cent of the population the disease becomes arrested and latent. Dr. Opie¹⁹ has demonstrated that portal cirrhosis is a subinfection by showing that whereas chloroform alone will not cause cirrhosis in the animals of the laboratory, although it causes necrosis of the live cells which subsequently regenerate, and whereas inoculation of sublethal doses of colon bacilli alone will not cause cirrhosis, chloroform followed by sublethal doses of *B. coli* surely will. I will not go into these matters here. A year ago I referred to them in Iowa City.²⁰ What I want to point out to you is that properly made blood cultures afford a high proportion of positive results in cases of continued intestinal stasis, and that most, if not all, of Lane's symptoms, which have not so far been demonstrated to be due to intoxication, are such as follow subinfection, and that not necessarily originating through the lower bowel, but due to the carriage in of bacteria through the mucous membrane at any point from the mouth to the anus.

I will not say—that would be absurd—that intoxication, by the indol group, for example, plays no part. I would only say that our present knowledge of the phenomena of enteral and parenteral diges-

tion suggests that the toxic products of protein (including bacterial) disintegration are most effective upon the tissues when they are produced within them, and not upon the outer side of the mucous membrane. Thus to apply these considerations to Lane's symptoms:

Loss of fat (1) and wasting of the muscles (2) can be induced by inoculating animals with recurrent sublethal doses of *B. coli*. Such recurrent inoculation of sublethal doses of *B. coli* or of streptococci induces hemolysis and liberation of blood pigment in the circulation.³ As shown some years ago by Charlton²¹ in my laboratory, a grave condition of anaemia may be induced by this means in laboratory animals. The pigmentation reaches an extreme degree in "microbic cyanosis," the condition first described by Stokvis, in which the late Dr. Gibson of Edinburgh²² and Blackader and Duval of Montreal²³ have found, as obvious cause, an acute *B. coli* bacteraemia. The papules and pimples of the skin gain their simplest explanation as being of the same nature as the rose spots in typhoid fever, i. e., as brought about by lodgment of bacteria in the cutaneous capillaries.

The offensive perspiration I must leave an open matter. I am quite willing to accept it as due to the diffusion of volatile bodies of the skatol type from the intestinal tract.

Subnormal temperature (4) is one of the marked features of *B. coli* infection. As regards the symptoms of mental irritation or torpor and the melancholia (5), as already stated, I freely accept these as set up by members of the indol group, leaving it an open question whether these be of enteral or parenteral production. It deserves note, however, that *B. coli* inoculations also affect the nervous system, the most striking result being the production of parietic changes of an ascending type.

CHRONIC INTERSTITIAL FIBROSES.

Regarding the rheumatic aches and pains (6) and their origin, it is necessary to speak a little more at length, and that because, only within the last few weeks, rheumatic myositis has been for the first time experimentally induced and given an adequate explanation. These experiments throw a flood of light upon a most important group of so-called chronic rheumatic or rheumatoid lesions. It was my good fortune upon my journey here to spend some hours in Chicago with Dr. Rosenow, and there to study his exquisite material bearing upon the development of various strains of the streptococcus and the lesions produced by these different strains.²⁴ Among these were the lesions of myositis in the rabbit. These lesions he is able to produce with certainty, and that in the very regions in the rabbit in which in man the rheumatic aches and pains show themselves. They are not of toxic origin, but of the nature of a typical subinfection. Studying the lesions at various periods of their development it is seen that streptococci of a particular grade of attenuation become arrested in the muscle capillaries, more especially in those situated near to the tendinous attachments. For a few hours it appears that these multiply; following upon this a small area of muscle fibres in the immediate neighborhood of the affected capillary undergo necrosis and become pale. And here is the striking feature: the cocci do not proliferate further, but on the contrary disappear, undergoing lysis. There is no formation of a productive microbic lesion, no formation of an abscess, for example. It appears that so soon as the bacteria set up a reaction, whether by their mere mechanical presence or by endothelial phagocytosis of some of their number and liberation of their endotoxins, that reaction is adequate to destroy the rest of the bacteria, and this with

relatively very slight accumulation of wandering cells. But the liberated and diffused endotoxins are sufficiently powerful to destroy the more highly differentiated cells in the immediate neighborhood, and following this destruction there is either, in favorable cases, regeneration and restitutio ad integrum, or in unfavorable cases, a replacement and even a productive fibrosis.

I describe these lesions in some detail because it so happens that only in April last, delivering the Harveian lecture before the Harveian Society of London, Dr. Luff²⁵ very serviceably brought together all the examples of these chronic "rheumatic" affections, pointing out that the lesion is of the nature of a hyperplasia of the ordinary connective tissue in various points of the body, that the condition may undergo absorption, or may pass on to organization with the formation of nodules or patches of thickening. The parts implicated are the fibrous tissues of the joints, muscles and bones, aponeuroses and insertions of muscles, "the sheaths in which the muscle spindles lie," the bursae, fasciae, ligaments and capsules of joints, and the periosteum. The indurations may be widespread, but generally are well defined and vary in size from one-eighth of an inch to one inch in diameter.

Luff would group all these lesions under the comprehensive term "fibrositis." I will not here discuss whether this term is to be accepted. What I would point out is that he describes lesions identical with those produced experimentally by Rosenow. It is quite true, as he points out, that these most often occur without any previous attack of acute rheumatism. That, however, does not mean that they have not a similar etiology. As Rosenow has, I think, conclusively demonstrated, the reason why acute rheumatic endocarditis, for example, originates only in youth, is purely anatomical. The typical

verruose endocarditis of acute rheumatism is of embolic origin, and can be induced by inoculating half-grown rabbits with streptococci of a grade of virulence closely allied to that which in older rabbits will induce the above mentioned myositis. Why the older animals do not suffer from endocarditis is because in them the heart valves have become non-vascular, the fine arterioles present in early life in the proximal two-thirds of the cusps undergoing obliteration. In all probability similar vascular changes explain the incidence and location of rheumatoid changes at different life periods.

Following the older tradition, Luff regards this fibrositis as of toxic origin, although he gives no experimental evidence in support of this view, and interestingly enough quotes Ware as having demonstrated the presence of gonococci in the myositis secondary to gonorrheal arthritis. Here I would point out what Luff neglects to notice, that at times "muscular rheumatism" accompanies acute rheumatic arthritis of the ordinary non-gonorrheal type. By analogy, I would suggest that the muscular aches and pains of influenza are due to similar embolic lodgment and lysis of the influenza bacilli in the muscle capillaries.

More and more, in fact, are we coming to realize that various orders of chronic interstitial fibrosis originate from this condition of subinfection. I have already referred to Opie's experimental production of hepatic cirrhosis by action of the *B. coli* in the damaged liver. Recently Gaskell,²⁶ working under Aschoff, and Libman and Baehr²⁷ in New York, have drawn attention to a form of chronic Bright's disease set up by streptococcal embolism in the fine capillary loops of the glomeruli, accompanying subacute endocarditis of streptococcal origin. In all these cases, let me emphasize, we have at most a temporary proliferation of bac-

teria in the capillaries to which they have been carried, until such time as mechanically or otherwise they set up irritation and reaction; so soon as the tissues react the bacteria undergo lysis. It is not their proliferation, but their death that liberates the toxic substances which, diffusing out, destroy the higher tissue cells in the neighborhood, and simultaneously stimulate the lower connective tissue cells to proliferate and develop an area of fibrosis. We deal, that is, with something beyond local capillary infarct formation; the area of necrosis extends beyond the limit of the territory of the blocked capillary; its extent can only be ascribed to the action of liberated toxins. What is characteristic of all these cases is recurrence, or more accurately, they represent not simultaneous infection, but the summation of a succession of minute insults to the tissues, sometimes occurring within a few days or weeks, but often extending over years, so that on examination lesions may be discoverable in various stages. What is more, it is evident that the incriminated bacteria gain this recurrent entry into the bloodstream from various points—from the genital passages in gonorrhea, from the tonsils in rheumatic tonsillitis, from the gums in pyorrhea alveolaris, and it may well be from the intestines in cirrhosis and many other conditions. With this light upon the nature of the process it is now our duty to study the bacteriology of each case, and from that determine the treatment.

Having said this much, I can be very brief regarding the remainder of Sir Arbuthnot Lane's symptoms and diseases. The arterial, renal and eye changes (12, 13 and 17) belong to the "fibrositis" group; the pancreatic and hepatic changes (Nos. 15 and 16) have all the earmarks of the like subinfection. The very admission that the blood pressure is at times increased, at times lowered (8)

is indication that we deal with no one common basic intoxication; it is what might be expected in subinfection by different orders of bacteria. But this and the atrophy of the breasts (9) must properly be left as open matters. Lastly, as regards the atrophy of the thyroid (7) it deserves note that the work of the last year points to this as a result of infection. Farrant²⁸ has shown that diphtheria and other pathogenic bacteria inoculated into experimental animals induce excessive activity of the thyroid, and indicate that an important function of the gland is by its internal secretion to neutralize circulating toxins. Continued stimulation of the gland must result either in exhaustion and atrophy, or as Lane points out, in adenomatous overgrowth.

CONCLUSION.

To those who have not been following the drift of recent bacteriological research, this latter part of my address may appear to be of the nature of special pleading. Be it so; I shall be perfectly satisfied if it leads my clinical confrères to examine more carefully into these cases of chronic intestinal and rheumatoid cases, of cirrhosis and Bright's disease; in fact, of all the conditions commented upon by Lane, to determine whether evidences of infection or subinfection are to be detected. I would, however, in all meekness, object that the intoxication theory has been tried, and, save as regards a singularly limited series of symptoms, has so far been found wanting when subjected to the test of experiment; while on the contrary, it is possible to adduce experimental evidence in favor of each of my pleas in favor of the infective nature of the conditions discussed.

Thus to epitomize:

I. It is more rational to regard the evil effects of intestinal stasis as, in the main, a result of conditions favoring sub-

infection and low forms of infection, than as a result of chronic intoxication.

II. The term gastro-intestinal auto-intoxication is pernicious and not to be employed by any self-respecting member of our profession, save for so limited a set of conditions that for ordinary purposes it may safely be expunged from the medical vocabulary.

III. While the symptoms and diseases enumerated by Sir Arbuthnot Lane may follow intestinal stasis, at least a large proportion of them may originate independently of such stasis.

IV. Before recommending the operation of short-circuiting it is necessary, therefore, to make the fullest studies, so as to discover, if possible, the nature of the organism responsible for the disturbance and its probable seat of entry.

V. A discovery of the cause of the symptoms is calculated to suggest the appropriate means of treatment by means other than short circuiting. Only when these have been tried and found wanting is removal or short circuiting of the colon justifiable.

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TRAUMATIC SARCOMA.*

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The etiology of Sarcoma is a subject not merely of academic interest but it also has points of practical significance. If a causative relationship could be established between trauma and sarcoma it would lead to a more timely recognition of this malignant growth and its early eradication before metastasis has taken place. Again at times the genesis of this growth becomes a question of medico-legal importance.

It requires but little study of the past and current literature dealing with the causation of sarcoma to note the great factor that trauma plays in the development of this malignant form of tumor. A care-

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ful study of the histories of our patients as well as the perusal of experimental reports from the research laboratories will lead us to the assumption, at least, that injury is one of the causes, if not the chief one in the production of sarcoma.

On the other hand the question will be asked why sarcoma does not follow every case of trauma? We know of hundreds of thousands of injuries that occur in this world daily, yet comparatively few of these are productive of sarcoma.

This particular problem has baffled every investigator in quest of the true relationship between trauma and cancer. In the course of this paper I shall attempt to answer this question upon the basis of a new theory founded upon a histo-pathological study of embryonic connective tissue as well as clinical data from a number of patients afflicted with sarcoma.

Since the classic treatise of Lowenstein, who found 47% of all tumors to be due to trauma, many other writers have seriously considered injury as a great cause in the production of malignant growths, particularly that of sarcoma.

von Hansemann, for example, notes the frequently common and immediate occurrence of gliosarcomata of the brain after a blow to the head. In these cases, he says, the growth may form and become latent and at some future time produce death by apoplexy. In many cases of melanosarcoma Hansemann considers trauma to be the sole factor in the production of this growth.

Benke even believes that exuberant calluses may become directly transformed into sarcoma, and he narrates many cases of osteosarcoma as a result of a blow or injury and still more after simple fractures.

Virchow has accepted trauma as a factor in the etiology of sarcoma.

Coley, after a careful study of 970 cases of sarcoma which he personally observed,

concluded that a single local injury may cause a sarcoma and the cases that he has submitted certainly fulfill all the conditions necessary to establish a definite causal relationship between a single intensive injury and the development of sarcoma.

Thus I could go on and cite to you a number of other writers who report single or multiple cases of sarcoma following injury. In fact, I was able to collect a very large number of such cases from the limited literature at my disposal, to the summary of which I shall have occasion to refer later.

Notwithstanding these clinical data, the majority of the pathologists look skeptically upon injury as an immediate etiologic factor in the production of sarcoma. Their main reason for such skepticism being the fact that experimentally it has as yet been impossible to successfully produce a sarcoma by means of trauma. Such a reason, however, cannot hold entirely good in the light of the experiments made by Prof. Lewin at the Imperial Institute for Cancer Research. Lewin inoculated a great number of rats with sarcomatous cells and pinched the site of inoculation. He controlled these experiments by a series of inoculations minus the process of pinching, with the result that in the former the tumors grew larger, faster, and the inoculations resulted successfully in almost all the rats. The opposite was true of the latter group where the experiment was made without the pinching. In those rats the growth was mostly unsuccessful, and where it did take the tumor was in no way as large nor did it grow as fast as in the rats which were traumatized in addition to the inoculation.

The above experiments must materially modify our acceptance of the statements made against trauma as a factor in sarcoma production.

Now let us briefly consider the views of

our eminent pathologists who refuse to give trauma the proper recognition in the genesis of sarcoma. Among them we have Ribbert, Bostrom and Marchand. Ribbert's theory is too well known to be repeated here, but even he does not deny the possibility of trauma giving rise to sarcoma.

Borst recognizes in trauma a moment when the embryonic cells are dislodged. He considers all tumors to be due to wandering embryonic cells which remain in the body after birth and are set free by trauma to the part, giving rise to their proliferation and tumor formation.

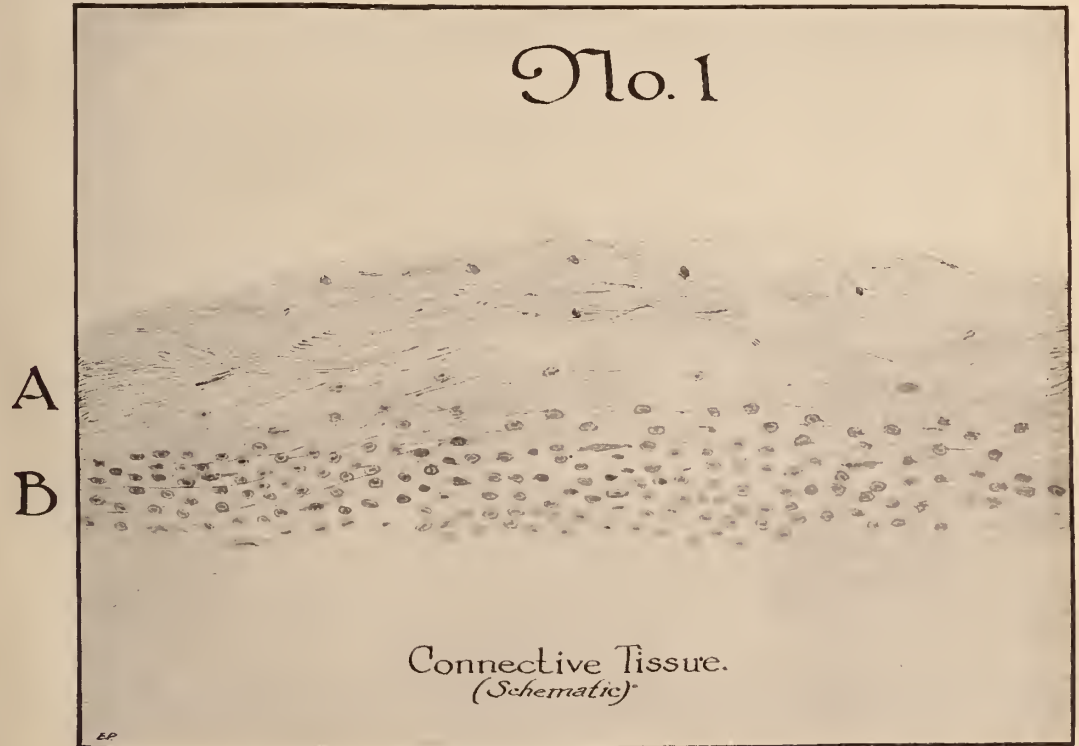
Bostrom agrees with Borst, but maintains that, given a previously healthy tissue, no tumor can originate in it after trauma.

Marchand attributes malignancy to the biologic changes which take place in the embryonic cells which constantly wander about in the tissues of the adult. These biologic alterations he claims may be brought about by trauma.

In addition to the above expressed theories and opinions it is generally demanded: That a continuity between the time of injury and tumor formation be established. (Jordan) Thieme further requests as proof that the tumor should arise upon the exact site where the injury has previously taken place. The above however refers to cancer generally. All pathologists as well as clinicians are willing to yield some points when considering sarcoma by itself.

The writer will endeavor to satisfy these demands in the clinical dissertation of this subject, but before entering into this part of the discussion permit me to pass in review certain important points in the histology of connective tissue and also enumerate the chief pathologic characteristics of the structural elements which dominate sarcomatous tumors. By so doing we shall get a better understanding of the close analogy between normal and pathologic connective tissue.

We know that sarcomata are tumors of the connective tissue type, but instead of



fibers, as we are apt to picture to ourselves when speaking of connective tissue, these tumors are largely composed of cells where in the ground substance is much less abundant in proportion to the cellular elements than in normal or adult tissue of that type. The cells of such neoplasms resemble closely those found in the developing connective tissue of the embryo or the granulation tissue of inflammation, in which they are known as fibroblasts.

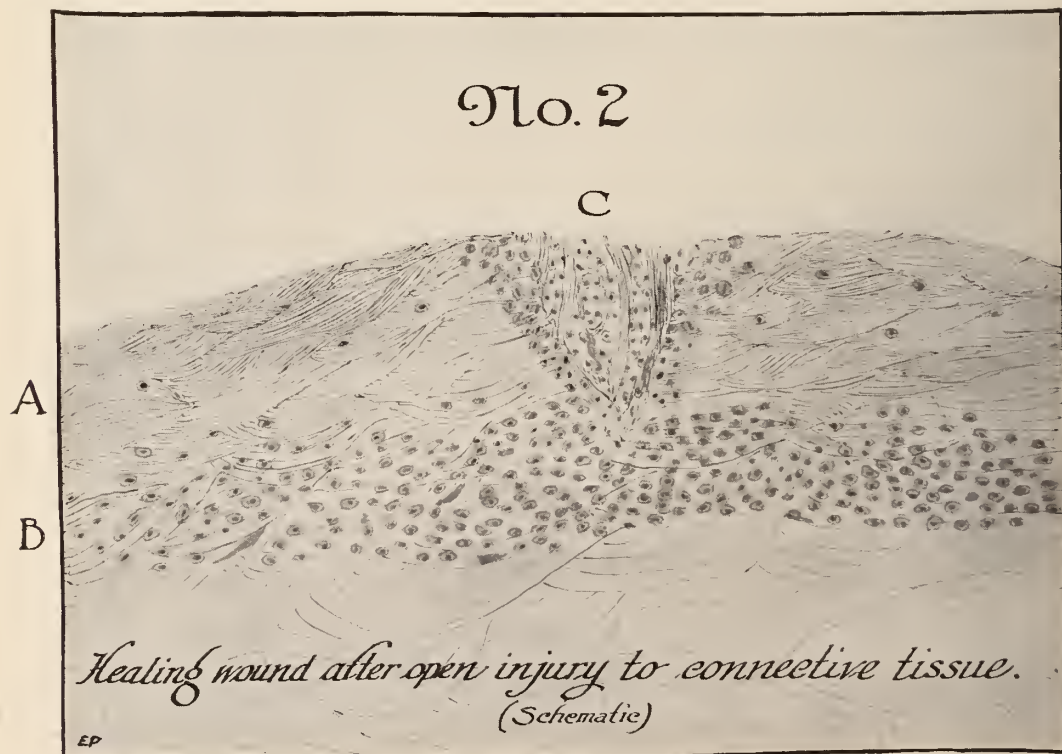
In studying the histology of embryonic connective tissue we learn that here, too, the cellular elements are greatly in preponderance (see Fig B, Plate I), the ground substance being relatively scanty and the development of fibers as yet incomplete. Right here let it be noted that this class of immature connective tissue is found not only in the fetus, but also in early childhood as well as in the adult, especially during regeneration of destroyed cells of connective tissue and in other more

or less pathologic conditions. (See Fig. B, Plate II).

It is therefore clearly evident that the dominant cell in sarcoma is identical with the one found in regenerating tissue following injury. (See Fig. B, Plate III). Be it remembered also that sarcoma occurs at an early period of life, when the proliferative power of connective tissue is at its height.

The significance of these introductory remarks will become apparent when we classify injuries into two subdivisions, namely, "Trauma oeculta" and "Trauma aperta."

It is absolutely essential when we speak of trauma in relation to sarcoma, to emphasize whether the injury is an open or closed one, because the process of repair which subsequently follows, and upon which, in the opinion of the writer, the genesis of the growth depends, is so vastly different in the two forms above named.



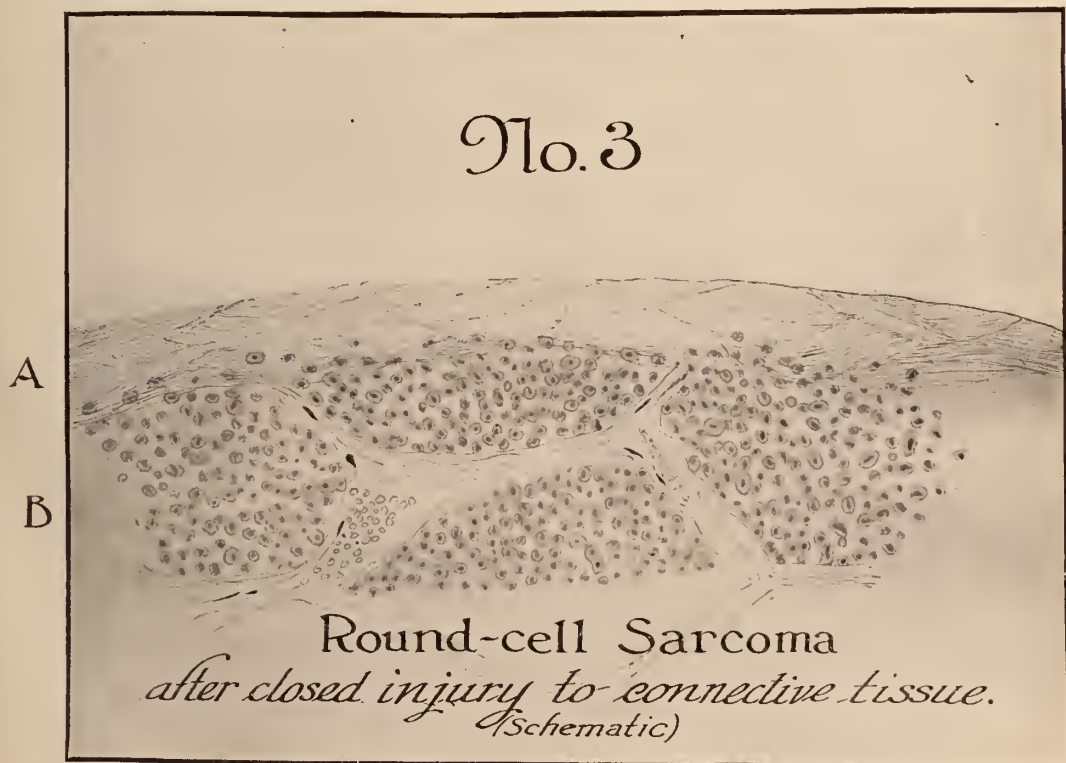
The process of repair after any form of injury to connective tissue consists of a proliferation of fibroblasts. We also know that these fibroblasts are located in the loose areolar stratum which always underlies the true fibrous layer of any connective tissue structure, as exemplified by the periosteum, various fasciae or tendon sheaths. (See B and C, Plate II).

Therefore when we have an open injury involving the above named tissues the migration of these fibroblasts towards the site of injury is not impeded. By making fine fibrillary connections with the cells nearby they ultimately form the granulation tissue of healing wounds. In a closed injury, however, the movement of these fibroblasts is necessarily checked by the overlying tissues, which are intact, while their proliferation—the inherent property of these cells—goes on just the same as in any other form of cell irritation or cell injury.

This in brief constitutes the difference

in the pathological sequences following an open or closed injury involving connective tissue structures. To this must be added the fact that the power of regeneration is ordinarily greater in connective tissue cells than in any other form of cells in the body, and this activity is greatly enhanced when stimulated by an injury. In this connection it is significant to note another important fact which has been definitely established, namely, that the injury does not have to be direct to the cells, on the contrary, they are decidedly more stimulated when merely put upon a constant but not excessive stretch. If only well nourished their proliferation will readily ensue.

If I have made myself clear in what I have said above, it necessarily follows: That for certain pathological reasons when connective tissue structures are traumatized the proliferation of fibroblasts takes place, and when the injury is a closed one this process of proliferation goes on and the



new cells by their migration invade every empty space in the surrounding and neighboring tissue until farther restrained by some new structure that they may encounter which acts like a limiting membrane.

Just like the periosteum, whose chief function, according to the teaching of Macewen, is to limit the distribution of osteoblasts and preventing their migration to the soft tissues, so it is with any of the fasciæ or other connective tissue covering in the body. They prevent the penetration of fibroblasts into adjacent tissues against which they stand as a barrier.

These striking facts which we have thus far presented justify in my belief the following conclusions:

That given a closed injury to any connective tissue structure in a previously healthy individual sufficient to cause a proliferation of fibroblasts, and these in turn encountering no resisting structure to check their distribution, a sarcomatous growth may result.

This, therefore, is the writer's theory for the causation of sarcoma by means of trauma, and we shall now turn to the clinical discussion of the subject in support of this theory.

From a careful study of the available literature I was able to compile statistics from two thousand cases, but in order to prevent this report from becoming too unwieldy, I shall have to condense this study and present a concise summary, which will, however, be sufficient to illustrate the contentions made in the pathological part of this communication.

The following, then, are the salient points:

(1) That a distinct history of an antecedent trauma is given in 57.8 per cent of the cases. In many reports included in this series the anamnesis is entirely omitted.

(2) Of these injuries 94.6 per cent were of the closed variety, such as falls, kicks, blows and strains.

(3) That 62 per cent of the tumors occurred in the first three decades of life.

(4) The length of time intervening between the occurrence of the injury and the recognition of the existing growth shows 78 per cent to have developed within the first six months.

(5) A careful tabulation of the entire series demonstrates that 97 per cent of the neoplasms were located in the extremities, of which 63 per cent were in the lower and 34 per cent in the upper, a fact most notable since probably the same ratio is true of all injuries sustained by the different parts of the body.

(6) The internal organs are but rarely injured, and still more rarely invaded by sarcoma, constituting only 3 per cent of the entire series. Of these the testicle is the one chiefly affected, an organ which we know to be frequently injured.

The correct interpretation of the above summary demonstrates beyond doubt that there is a definite link between trauma and sarcoma. It also shows that the great majority of cases occurred in early adolescence when the proliferative power of connective tissue is at its height. How striking is the fact that in almost all cases the preceding injury was blunt and closed. And to crown it all we have the great preponderance of tumors in the extremities, which in the writer's opinion is equal in proportion to the injuries received by these parts of the body. No matter how skeptical one may be, he cannot but see from these clinical data the fact that only closed and blunt injuries are conducive to sarcoma production, a doctrine laid down by the writer in the theoretical part of this subject.

It is my desire to still further elucidate this doctrine by a report of four typical cases from my personal observation. These cases will also serve to emphasize the importance of early diagnosis as well as early operation. Removal of the neoplasm while still in the beginning stages is, after all, the

keynote of success in this class of patients.

Case I. Mrs. R. J., aged 24. Family history: Father died at 70 of cancer of the liver, otherwise negative. The patient has always been well.

Present trouble: In the early part of December, 1907, the patient had the fourth toe pinched by a tight roller skate. This toe gave her some pain at times, but it was not until two months later that she first noticed a small wart-like growth upon the dorsal surface of the toe. The physician in charge diagnosed it as a corn and prescribed an ointment, which she used for about three weeks without relief, the tumor during this time becoming slightly larger. I first saw this patient on March 6th, 1908. Upon examination a hard growth the size of a small hazel-nut was found on the dorsal surface of the fourth toe, right over the inter-phalangeal articulation. A small section of the growth was removed and submitted to the late Dr. Wilder for pathological examination. His report was round celled sarcoma. Operation March 8th, 1908. The toe was amputated, all tendons were pulled out as far as permissible and also removed. The latter were afterwards found to be sarcomatous. This patient was examined on October 1st, 1913, five and one-half years after operation, when there were no signs of recurrence.

Case II. Miss A. K., aged 26. Family and social history have no bearing. In May, 1908, the patient slipped while walking downstairs, fell against a newel post, the latter striking her left breast. She had slight pains in that breast continuously, but paid no attention to it. About six weeks after the original injury she discovered a small nodule at the upper and inner quadrant of the breast, which kept on increasing in size. When examination was made on August 5th, 1908, a small hard tumor was found in the above mentioned location of the right breast. The nipple appeared normal and there were no palpable glands. A

section of the growth was examined by Dr. Wilder, who reported spindle-celled sarcoma. August 19th, 1908, the breast was amputated. This patient has been well ever since, and up to date, five years after operation, she has perfect freedom from recurrence.

Case III. Mrs. M. A., aged 23. Family and social history negative. In March, 1912, while in a crowd at the entrance of a moving picture theater, she received a blow over the midsternum. Pain at the site of injury was continuous and grew progressively worse, for which various analgesics were prescribed by her attending physician without relief. Patient was first examined by me April 24th, 1912, when a very indefinite small mass over the lower portion of the gladiolus was outlined. Sarcoma was suspected and an X-ray examination advised, for which the writer was promptly discharged. I have since learned that about four months after I saw her this patient died from metastatic sarcoma of the chest wall and mediastinum.

Case IV. For the privilege of studying as well as assisting at the operation of this patient I am indebted to my associate, Dr. J. F. Roe, in whose practice the case occurred and through whose courtesy it is herewith reported.

H. J. D., aged 21, male. Family history negative. Has always been in perfect health.

On May 4th, 1912, while coal mining, his right shoulder was pinched between two bars. He experienced no great pain at the time and kept on working. On June 1st, 1912, while trying to throw a ball, he felt a slight pain in the same shoulder, but did not consider it of sufficient importance to consult his physician. About the middle of July, 1912, the pain became more aggravating and he sought medical advice. The case was treated as a simple contusion by local applications, such as liniments and ointments. In spite of this treatment he

was getting progressively worse and about the 10th of August he consulted a specialist, who diagnosed the case as tuberculosis of the shoulder joint and treated by immobilization. On September 3d he consulted another doctor and was informed that the case was one of peri-arthritis of the shoulder joint. An X-ray picture taken at that time you will see in the radiograph No. 1. For the next four months he was

bony and cartilagenous tissue was encountered, which proved to be the destroyed



Radiograph No. 1.



Radiograph No. 2.

treated by different medical and non-medical methods without benefit—on the contrary, pain in the joint had increased to such an extent that he was compelled to take from 75 to 100 grains of aspirin per day.

Patient was first examined by Dr. Roe and myself on January 2d, 1913, when the right shoulder was found to be considerably larger than the left, extremely sensitive to touch and completely immobile. Some fluctuation could be elicited on palpitation. Subjectively the patient complained of a great deal of pain, loss of weight, anorexia and insomnia. Malignancy was considered and the patient referred to Dr. S. B. Childs for X-ray examination, whose diagnosis was cystic sarcoma of the coracoid and neck of scapula. (See radiographs Nos. 2 and 3).

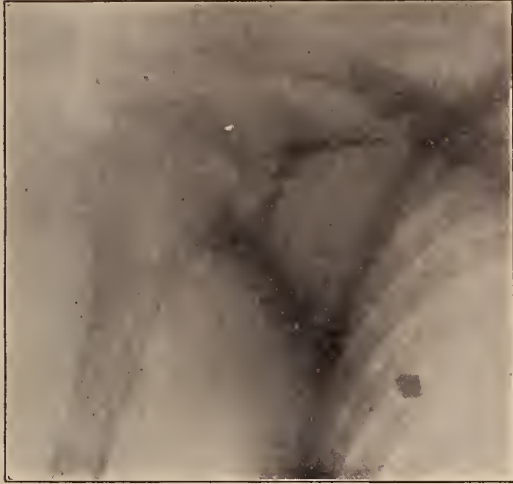


Radiograph No. 3.

Operation January 6th, 1913. Upon entering the joint through an antero-posterior incision a semi-solid mass of broken down

coracoid, neck of the scapula including the glenoid cavity. The head of the humerus was not involved. All diseased tissue was removed beyond the zone of healthy bone. No glandular enlargement was perceptible. The wound was closed with provision for drainage. Pathological diagnosis by Dr. Hillkowitz of the tissue submitted to him for examination was chondro-sarcoma.

At the present writing the patient is in perfect health and is engaged as a meat cutter, an occupation which entails the use of his arms and shoulders extensively. The result of the operation as well as the extent of the usefulness of the affected shoulder may best be seen from radiograph No. 4,



Radiograph No. 4.

as well as the photographs of patient taken October 1st, 1913 (Plates 5 and 6), seven months after operation. From my own examination of the patient on the same date I found that he has gained over twenty pounds in weight since the operation and that he suffers no inconvenience



Plate No. 5.

from the loss of his right coracoid, glenoid and part of the neck of his scapula.



Plate No. 6.

Despite this and other proof which I have offered to establish the role that closed trauma plays in the genesis of sarcoma, I am only too mindful of the fact that my theory will find many opponents; however, if the matter herewith presented will shed but one ray of light to illuminate this obscure problem of sarcoma production—I shall feel amply repaid for my labor in getting up this study.

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318-19 Commonwealth Building.

DISCUSSION.

Philip Hillkowitz, Denver: That the cause of tumors is still shrouded in mystery has been sufficiently dwelt on in the three papers that we have had today bearing upon this subject. Any light shed, therefore, on this matter is worthy of our earnest consideration. That trauma is a factor in the acquisition of neoplasms is, I think, pretty well settled, but that it is the exciting cause has not been proven, and is far from having been proven; otherwise every injury would naturally lead to tumor. There must be some other factor. What that other factor is remains the plaything of speculation by theorists; whether it is a parasite, a misplaced embryonic nest, or, as Dr. Boyd has so beautifully expressed it, a variation of the biologic characteristics of cells, only the future will decide.

The theory promulgated by the essayist is certainly interesting. It seems at first sight rather peculiar that some injuries will cause a sarcoma of a sarcoma or, to be more conservative, be followed by sarcoma, and others again will not be followed by sarcoma. What more natural than to assume that in one case those connective tissue cells which always regenerate whenever there is any injury to the tissues, become tumor cells when they are closed in, whereas if there is a chance for draining they do not!

The theory may be true. At the same time, considering the fact that these tumor cells have such enormous proliferative powers that they break through all kinds of tissues, that even going through bone, through periosteum, the densest of fascia, it seems hard to conceive that when there is no limiting membrane, no tumor will be formed, and when there is a limiting membrane it will be productive of tumor. At the same time, I would say that we

cannot condemn this theory offhand. It is certainly worthy of our deep consideration, and investigations of this kind will eventually lead to the final solution of this important question.

Charles A. Powers, Denver: I have read with attention the interesting dissertation by Dr. Shere. We are all familiar with very many examples of the development of sarcoma following an injury, and his theory regarding the reasons why this occurs is certainly suggestive. I am impressed by the thought that, as Dr. Shere says, the power of regeneration is ordinarily greater in connective tissue cells than other forms of cells, and that this activity is markedly increased when stimulated by an injury.

Such papers as this of Dr. Shere's allow one to think closely along given lines, and I venture to express the thought that he has brought out something which further and prolonged investigation may prove to be of definite value.

In connection with the general subject of tumors, I cannot refrain from again calling attention to the very great necessity of early exploring and investigating all new growths, and this at the earliest possible moment. Whatever the future may bring forth, we know that at this time early and very fair operation offers the best chance of cure in malignant diseases.

George A. Boyd, Colorado Springs: I cannot resist the opportunity to express my appreciation of the Doctor's paper, investigation and the thought given to his theory of the cause of sarcoma. The biologist is teaching us what we know about tumors, the laws of the growth of the cell, the fact that the nucleus and cytoplasm bear certain essential relations of size, that they are interdependent in their activities, the cytoplasm furnishing food for the nucleus, and the nucleus in return furnishing certain substances which pass into the cytoplasm and supply it with digestive ferments, always preserving a balance of function between the nucleus and the cytoplasm. This helps us a step. A disturbance of this equilibrium has a tendency to bring about cell proliferation. To the Doctor's explanation, I wish, if I may, to try and add another suggestion or two.

In the first place, Carrel has shown that by the addition of certain substances and by the providing an environment of proper nature he can increase cell growth from one to forty times that of the normal. By this increase we furnish a second step in the development of the new connective tissue, which is a mesenchymal tissue, and which represents a greater persistence and reproductive power than any of the other tissues. In the open wound there is free drainage; in the closed there is no drainage; the accumulated fluids provide a pabulum which stimulates a continued cell growth.

The nucleocytoplasm balance is hard to maintain; under favorable conditions the nucleus tends constantly to increase its size relative to the cytoplasm, and when the nucleus reaches a certain proportional size to the cytoplasm, division of the nucleus takes place. Under favorable conditions the nucleus gains upon the cytoplasm, and the time comes when the nucleus gets to such a point that it can no

longer take care of itself, because of the scarcity of the cytoplasm, and other methods of origin take place. This is shown by hyperchromatosis, amitosis and giant cells.

In the section that I have shown here of the case reported these conditions are very beautifully shown. To those of you interested in this, if you will read the article by Howard in the Lakeside Hospital Reports, Western Reserve College, you will find a most useful dissertation on this subject.

Just to show you how immensely these things may be affected by one simple factor—temperature—one of Howard's students proved that the process of reproduction in a simple protozoon was once in two hours—if I remember the hours just right—at a temperature of 25 C. He also shows by plasma increase graphing the lines of the nucleus that at a certain point cell division always took place. This maximum relation occurred every two hours, at which time nuclear division set in. By reducing the temperature from 25 to 14 C., or by reducing it to some lower temperature relation, the time required for reaching this maximum was six to ninety-six hours, showing that under certain physical conditions cell division and cell life, being carried on slowly but normally could be increased from once in two hours to merely once in ninety-six hours, bringing a more stable equilibrium between the nucleus and cytoplasm and preventing those processes of changing relative masses between the nucleus and cytoplasm of the cell, which lead to cell division, all of which helps us to understand how these hidden traumas bring about, through the changed pabulum, slow or rapid cell growths. Such cell growth is truly parasitic, because it is no longer under the control of the physiology of the body.

Moses Collins, Denver: A case came under my observation a short time ago which I think bears upon the paper and brings out a point in diagnosis which I believe perhaps the writer overlooked. An expressman who had chronic tuberculosis of several years standing became injured in his work. He had, as a result of that injury a painful hip, and considerable difficulty in directing the movements of the leg. Under the care of a competent surgeon, an X-ray was taken of the hip and the case pronounced one of tuberculosis of the joint, an extension of the disease that the man was already afflicted with, and he was treated along that line for some time. At first a cast was put on, but no relief was obtained. When the cast was removed, after a few weeks longer of pain and suffering, a well-developed case of sarcoma of the hip was easily diagnosed. The point is this: Here was a man who had a disease of the hip produced by trauma, and a diagnosis made of tuberculosis because the man was already tubercular.

I know of another case now which is also tubercular and who received an injury to the knee joint by falling downstairs. Now, the question comes up: Is this also a case of tuberculosis of the knee joint, an extension of his tubercular disease produced by trauma, or is it going to develop into a case of sarcoma? The differential diagnosis between incipient tuber-

culosis of the hip joint and a beginning sarcoma is no doubt a very difficult one. Perhaps the surgeons, or those who come frequently in contact with sarcoma can elucidate this, but the point that I want to make is this: That when you have a case which is tubercular and he receives an injury to one of his joints or to some bony part of the body, producing painful symptoms, don't be too sure that the affected part is tubercular.

Samuel B. Childs, Denver: I think Dr. Shere's paper is very timely in emphasizing the importance of early diagnosis in these cases, no matter how trivial the injury may be. Dr. Collins brings up the point of early diagnosis between a tuberculous hip and a sarcomatous hip. The diagnosis between these two conditions from an X-ray standpoint is difficult, if not impossible, in the very early stages, and that is the standpoint from which the diagnosis will practically have to be made. The two conditions simulate each other very closely in the early stages, and ordinarily we depend somewhat upon the previous history of the patient, which in this case would lead to a wrong conclusion.

But the point that I want to emphasize is this, that no matter how trivial the injury may be to a bony structure, the case needs careful watching. We know that frequently cases are referred to us for a slight injury of the bones. For instance, take the tibia. We can find that there is a little enlargement; we call it periosteitis and generally correctly so, but that condition either gets well quickly or persists for some little time, and if it goes on it should be carefully watched.

I have one case under observation at the present time. The case was sent me for an X-ray examination probably three weeks ago. A young man was run over by a small mine car, and on the inner side of the left humerus there is an osteoma. The X-ray plate shows it is normal bone structure covered by thickened periosteum. It has not the appearance at all of sarcomatous tissue. Nevertheless, my diagnosis and instruction to the practitioner who referred the case was that the case should be watched carefully, that an osteoperiosteitis was there at the present time, but it might develop a sarcomatous element at any time. The point that I wish to call attention to, as I have already mentioned, is the necessity of watching these cases very carefully. I have had a number of cases referred for X-ray examination of sarcoma of different bones. The diagnosis, if it has progressed beyond, I would say, the early initial stages, where it has progressed far enough to have the absorption of the bone cells present, is comparatively easily made by means of the X-ray.

M. J. Krohn, Denver: Case No. 4, which Dr. Shere reports, happens to be a patient that came under my care long before the development of sarcoma, and also after the appearance of the same. After going into the case pretty thoroughly I could not attribute the cause of the sarcoma in this case to anything else except an injury which she received to the sternum in attempting to force her way into a moving-picture show. I have also had

the opportunity to examine the case of which Dr. Collins speaks. This case developed a sarcoma of the left hip joint, and inside of six months attained an enormous size. In this case also there was not a single accountable cause outside of the injury.

From what I have seen of these cases, I am also convinced that trauma is a most important factor in the production of sarcomas.

O. M. Shere, Denver: I appreciate the discussion accorded my paper, and I should like very much to answer in detail every one of the points brought out by the different members, but one can not do it in the short space of the allotted five minutes.

In the case cited by Dr. Collins, if an X-ray picture were made at the time when the patient first came under observation I believe the correct diagnosis would have been made. The fact that a cast was applied without relief of the existing symptoms should have at least aroused the suspicion that the previous diagnosis of tuberculosis was probably wrong. My plea is that every case exhibiting symptoms following injury should be carefully watched for as long a period as possible. Watch the

patient until the symptoms have entirely disappeared or a diagnosis of some definite character has been made and substantiated either by radiogram or exploratory operation if necessary. The mere dispensing of such patients with a plaster or a liniment for persistent pain following injury is wrong practice, in my opinion.

The parasitic theory of cancer mentioned by Dr. Grant is not applicable to sarcoma. In my paper I have endeavored to distinguish between carcinoma and sarcoma. I contended that a single injury may be productive of sarcoma, whereas persistent irritation to a given part may give rise to carcinoma. The latter I believe is universally accepted.

What Dr. Hillkowitz said with reference to my theory is true. The pathologists, however, have thus far failed to give us anything definite regarding the etiology of sarcoma; therefore the facts gleaned from clinical experience which I have summarized in my paper may prove of some value. It is only by means of co-operation between the pathologist surgeon and chemist that we may eventually arrive at the true facts as to the causation of cancer.

EXCERPTS FROM RECENT LITERATURE

Rehabilitation of Boiled Milk.—The British Government Blue Book contains an article on "The Biological Properties of Milk," by Dr. Janet Lane-Claypon.

In this country Dr. Abraham Jacobi is almost the only pediatrician of note to use boiled milk in preference to the raw, and English physicians are very slow in adopting it, although boiled milk has always maintained its place as a food for infants on the Continent.

In an exhaustive study of the subject Dr. Lane-Claypon has demonstrated that boiled milk forms a much more delicate and friable curd than raw milk and that the question of the heat-sensitive biological substances in cow's milk, in the form of ferments, are not present in pure milk, are not essential and are always derived from bacteria. Furthermore, the so-called biological substances in raw milk are not absorbed in the alimentary canal, but destroyed there.

Diphtheria.—E. Von Behring (Deutsch Med. Woch., 1913, XXXIX, 873) believes in the prevention of diphtheria by the use of a mixture of diphtheria toxin and anti-toxin. The mixture does not neutralize. Apes can be killed by small doses. It is inert for man, and by injecting small amounts, immunity lasts for about two years.

Von Behring is working out a system of exact administration by intricate and minute methods, in regard to dosage, reaction, amount of anti-toxin produced in human blood, duration of protective reaction, etc., and from his experiments to date it seems to have merit as a prophylactic measure.

Antimony Trioxides in Trypanosomiasis.—W. Kolle, O. Hartock, W. Rothermundt and W. Shurman (Deutsch Med. Woch., 1913, XXXIV, 825) have discovered that a 30 per cent oil emulsion of the trioxide of antimony given intra-muscularly proves most efficient in the treatment of

A New Prophylactic Remedy Against

sleeping sickness. Antimony in the form of its other salts is more or less poisonous and produces deleterious effects, while the trioxide is inert and will quickly destroy the trypanosoma; 1/100 of a fatal dose is sufficient to cure infections in mice.

Blood Pictures in Meningitis and Pneumonia in Children.—J. H. Hess (American Journal of Diseases of Children, Jan., 1914), in an extensive article, sums up the blood pictures in epidemic meningitis and pneumonia in children as follows:

EPIDEMIC MENINGITIS.

All cases have marked leukocytoses. Neutrophils are the predominating cells before the administration of serum. Moderate but absolute lymphocytosis is found in all cases, most marked during convalescence. Eosinophils disappear absolutely early in the infection and do not recur till convalescence has set in. With recurrences and the reappearance of the organisms in the spinal fluid, they again disappear. Their presence and reappearance was associated with signs of good omen. Cellular blood examinations have no diagnostic value. Much can be learned as to prognosis by a regular examination of the leukocyte. A drop in the neutrophil count with an increase in the lymphocyte and reappearance of the eosinophiles indicates a good prognosis. An approximation of the neutrophil and lymphocyte curve is of good import. The leukocyte count is of most importance as an indication for further prognostic punctures or the need of serum. An increase of the neutrophils and temperature with disappearance of the eosinophils should always lead to further spinal puncture. The neutrophils remain low and eosinophils are usually present during the stage temperature and cerebral reactions associated with anaphylaxis.

PNEUMONIA.

Generally speaking, a high count indi-

cates a severe infection in an individual of strong powers; a moderate increase indicates either a slight infection with good resistance, or a severe infection with inadequate reaction. A low count suggests either a slight infection or an overpowering influence. The usual blood picture in a pneumococcus infection is that of a high neutrophil count with moderate lymphocytosis before the crisis. A deviation from this picture should lead one to suspect typhoid, tbc, influenzal infections, or the presence of a rickettsia. There is a rapid fall in the neutrophils after the crisis. Pseudocrisis is associated with little or no reduction in the total amount. Sudden increase in the total and neutrophil counts and a tendency to remain high should lead to a suspicion of complications. Eosinophils practically disappear during the height of the disease and a recurrence can usually be considered a good sign.

Infectivity of the Milk of Syphilitic Women.—P. Uhlenhuth and P. Mulzer (Deutsch. Med. Woch., 1913, XXXIX, 879) have demonstrated the presence of the treponema pallidum in human milk organisms were also found in the milk of the mother having a syphilitic child, the mother being free from symptoms. This demonstrates the danger of accepting a wet nurse to non-syphilitic children without first having a Wassermann. The absence of symptoms does not mean a non-infective stage of the disease.

Peritoneal and Pleural Absorption in the Fowler Position.—Dandy and Rowntree (Beitr. zur Klin. Chir., 1913, p. 539) have made a very careful and exhaustive study upon peritoneal and pleural absorption with special reference to post-operative posture, such as the Fowler position and its modifications. The study was undertaken with the idea of establishing whether or not there exists a scientific

basis for any particular post-operative position in the treatment of purulent peritonitis. Their experiments were also pursued along lines which would disclose the exact methods of absorption, i. e., the channels employed by nature and the rapidity with which this process is accomplished. An analysis of their admirable and highly accurate work leads to the following conclusions:

1. That there exists a very rapid absorption from all parts of the abdominal and thoracic cavities.

2. This absorption depends mostly upon the blood and not upon the lymphatic circulation.

3. The quantitative absorption from the peritoneal cavity is equal in all positions, except in the pelvic position, where it is 15 per cent lower than in any of the others.

4. The absorption from the thoracic cavity is also equal in all positions, except the pelvic, where it is 13 per cent lower than in all the rest—for which no explanation is offered by the essayists.

5. That the visceral peritoneum plays an important part in the absorption of foreign material from the abdominal cavity; the pleura, however, does not possess the same function.

6. The existence of an intra-peritoneal current towards the diaphragm could not be established experimentally, nor could they find any special absorptive power in the central tendinous portion of the diaphragm.

7. All parts of the peritoneum absorb toxic or foreign material alike, except the pelvic part.

8. The gravity of the foreign matter has a decided influence upon its localization, this being particularly true of the pleural cavity.

9. The abdominal viscera inhibit the gravitation of fluids in the peritoneal cavity.

10. The authors agree with Yates by stating that intestinal rest has a decided influence in the destruction of effusions.

11. Although the Fowler position was primarily based upon erratic and unscientific conclusions, the writers commend it in the light of their experiments.

Surgery of the Spleen.—Bland-Sutton British Jr. of Surg., Vol. I, No. 2) considers splenectomy a severe operation, which should not be undertaken except for the following conditions: (1) Injuries, such as rupture, stabs, gunshot wounds and the like, for they endanger life from hemorrhage. (2) When enlarged and mobile the spleen is dangerous to itself, and may interfere with other viscera. (3) When the seat of malignant disease, or occupied by an echinococcus colony, or cystic from unknown causes. (4) Splenomegaly such as exists in the conditions known as anemia and the conglomerate group covered by the term Banti's disease. (5) Morbid conditions blood borne, such as abscess due to the lodgment of septic emboli, tuberculosis, infarcts and thrombosis of the splenic vein. (6) Aneurism of the splenic artery. (7) In the course of removing large perirenal tumors; also in performing gastrectomy, it has been found necessary to remove the spleen when it has been implicated by the growth. In such circumstances the splenectomy becomes an incident in the operation.

The mode of performing this operation varies with the position of the spleen, and this concerns not only the best site for exposing the organ, but also the method of securing the pedicle. Too much care can not be expended in securing the vessels; one of the greatest dangers of splenectomy lies in the slipping of ill-applied ligatures after the patient has been returned to bed. An analytical study of Sutton's own work as well as that of oth-

ers offers the following important facts:

The removal of the spleen in patients with leukemia is the most fatal operation in surgery. Probably no leukemic patient has recovered from this operation; death is due in most cases to uncontrollable bleeding or to shock. In cases of wandering spleen the operation is accompanied by the same risks that beset an ordinary ovariectomy. The removal of a malarial spleen is attended with a great risk; probably 30 per cent mortality when the spleen lies in its normal position. In the category of splenomegaly the operation is associated with greater risks, but the death-rate varies with the skill and experience of the operator. It is encouraging to realize that, when patients recover from splenectomy, there is nothing in their condition to suggest that they are spleenless.

Constituent Societies

LARIMER COUNTY.

Society met in the Y. M. C. A. building February 5, 1914. There were present Drs. Rew, Kickland, Noël, Quick, Schofield, Taylor, Halley and Stuver. There were also present as guests and participating in the discussions Mr. Schantz and Mr. Thorman, local pharmacists, and Dr. O. L. Smith, dentist.

The applications for membership of Drs. Blanchard of Estes Park and Dr. Campbell of Loveland were referred to the censors for action.

Dr. Stuver then read a paper, "Should the Physician Dispense His Own Medicines?" He first called attention to the persistent efforts that are being made by the retail drug associations to secure repressive legislation which will hamper and even prevent the physician from dispensing his own medicines to his patients. He insisted on the importance of the physician being properly trained in chemistry, materia medica and therapeutics and then be given the right to choose whether he will dispense or prescribe his remedies. He discussed the question under the three aspects of the interests of the patient, the physician and society. Under the first heading he showed how the welfare or even the lives of many patients would be jeopardized if the physician was not permitted to dispense medicines for them when first called to see the case; how by prompt and efficient treatment many diseases can be jugulated, their course shortened or their symptoms greatly alleviated; and how pa-

tients living in remote country districts would be greatly inconvenienced and their lives often endangered if the physician did not go prepared to furnish medicines to them. Under the second heading the effect on the physician, he showed how dispensing his own remedies caused him to make a more careful study of their chemical composition, physiological action and therapeutic effects as well as making him a closer observer of the symptoms of the various diseases he is called upon to treat; how it brings him in closer touch and sympathy with his patient and enables him to maintain a better control over his actions and the disease under treatment; the charge that physicians buy and furnish their patients with cheap and inferior drugs was shown to be not only untrue but puerile. Under the EFFECT ON SOCIETY he showed how prescribing and the unauthorized filling of prescriptions led to self-drugging and neglect in the proper treatment of diseases in their early stages; also that fifty per cent or more of the habitues of morphine, cocaine and other narcotic poisons are caused by placing prescriptions containing these drugs in the hands of patients and permitting them to be refilled by the druggist. Mr. Schantz had a very good paper on the druggists' side of the question, in which he laid great stress on limiting all prescribing to the pharmacopeia and having the prescriptions filled by a druggist. The papers brought out an animated discussion in which nearly all present took part. All agreed, even the druggists, that no restrictions should be placed on the physician dispensing in emergencies; and it was generally conceded that he should have the right to do what he thought was best for the interests of his patient. On the general question of dispensing or prescribing some favored one plan, others the other. The use of active principle medication as so ably advocated by Dr. W. C. Abbott and his coadjutors and used by about 40,000 physicians in the United States was favorably spoken of by several.

"Immunity" was the subject selected for the next meeting. E. STUVER, Sec'y.

BOULDER COUNTY.

The Boulder County Medical Society met at the Boulderado hotel Thursday evening, January 29, 1914. Twelve members were present. The meeting was called to order by President Gillaspie.

Dr. G. H. Cattermole presented a case. A boy, age nine, with elevated toes, especially of the left foot, which case came on three or four years ago. Incontinence of urine and feces from birth until two years ago, when he was constipated. Mother gave a laxative. Knee jerks exaggerated. Pupils react well to light.

Diagnosis: Spinabifida. Canal closed over by skin. Lesion high enough to affect centers for defecation and micturition, as well as those for the feet. Has been treated by an osteopath, without benefit. Mother fell at the

seventh month of pregnancy, so the physician, in Chicago, at the time of delivery, told her spinabifida was due to maternal impression.

X-ray has been taken and will be shown later. Advisability of an osteo-plastic operation discussed, but was left until x-ray plates can be exhibited.

The paper of the evening was given by Dr. G. H. Cattermole on "American and European Post-Graduate Work." He spoke of Deaver's wonderful work in Philadelphia. Deaver is an able anatomist, surgeon and teacher. He visited Mill's clinic (surgical) later. Also Hirst's and Frazer's clinic, and Griffith's. In New York he visited Chapin's clinic; also the so-called "clearing house" for factory and shop girls who go wrong. Plenty of cases at Bellevue, but not very well utilized for teaching. Dr. Cattermole spoke briefly of his trip from New York to Vienna via Naples, Rome and Venice. A. M. A. post-graduate courses are the best in the world. He took work under Hamburger and Mayerhofer first and later in the children's hospital at a cost of 60c to \$1 for each hour of work. Instructors are enthusiastic, able teachers in Vienna. General surgical clinics and post-mortems are free. Old Vienna general hospital is being slowly replaced by new buildings. Many cases travel great distances to reach the clinics, hence many advanced stages of disease are seen. The A. M. A. of Berlin is poorly organized and poorly managed. Good work is hard to obtain. Hospitals are modern and good places for undergraduate work. Dr. Cattermole sailed from Bremen to New York. The weather was bad and the steamer crowded.

The paper was discussed by Drs. Gilbert, Queal, Snair and Spencer.

F. R. SPENCER, Sec'y.

OTERO COUNTY.

Regular monthly meeting of the Otero County Medical Association was held in the city hall, La Junta, on Tuesday morning of this week. The meeting was attended by eight La Junta physicians and three from Rocky Ford. The meeting was presided over by the president, Dr. R. M. Pollock. Following the business session, two excellent papers were read. Dr. Pollock read a paper on "The Healing Art," and Dr. A. L. Stubbs of La Junta read a paper on "Eugenics."

Those who attended the meeting were Drs. Pollock, Lawson and Maier of Rocky Ford, and Drs. A. L. and Jessie Stubbs, Hall, Moore, Brunk, Kearns, Finney and Johnson of the county seat.

COLORADO OPHTHALMOLOGICAL SOCIETY.

The regular monthly meeting of the Society was held on January 17, 1914, in the offices of Dr. A. C. Magruder, Burns building, Colorado Springs. Attendance, 15.

Dr. Wallace presented an iron molder whose right eye had on February 1st received a splash of molten iron. In spite of all treat-

ment there was an extensive adhesion of the lower eyelid to the cornea.

Dr. Bane reported a case of corneal burn from cleansing fluid, which consisted of almost pure hydrate of soda. The burn appeared much less severe at first than afterwards proved to be the case. The use of vaseline in the eye had seemed to make it worse, and a vegetable oil proved much more satisfactory. A layer of collodion had been used to limit adhesion of the lid to the eyeball.

Dr. Pattee presented a case of juvenile glaucoma or hydrophthalmus. The eye was greatly enlarged, the corneal diameter being considerably wider than that of the other eye. Some disturbance of the eye had been noticed shortly after birth, and the eye was noticeably large at ten months. The child was now four years old.

Dr. Neepor presented a boy whose right anterior chamber had been penetrated by a wooden splinter. A fragment 3 mm. long and of hairbreadth was left, reaching from the lens to the posterior surface of the cornea; and was removed with great difficulty through a keratome incision. There was a minute scar in the anterior lens capsule.

Dr. Neepor presented a girl of eleven years who at six years had been blind and semi-conscious for a week, after bumping her head against that of a playmate. There had been steady failure of vision, which now equaled counting fingers at from five to ten feet. The optic discs were atropic and there was horizontal nystagmus.

Dr. Neepor presented a case of herpes zoster, which was exceptional in that whereas the general disturbance was confined to the right side of the face, including the right eye, there had also been an eruption of vesicles over the lower part of the left side of the nose. There had been a severe cyclitis.

Dr. Magruder presented a case of interstitial keratitis, which had followed a mild attack of smallpox, in a man of thirty-six years. There had been severe nocturnal pain and photophobia. For a time there was a general ground-glass appearance of the whole cornea except the upper central area. The patient now had what looked like an interstitial abscess in the upper central part of the cornea.

Dr. Magruder presented a man on whose right eye a scleral trephining had been done for the relief of pain, the eye having been already quite blind from glaucoma. Pain in the eye had been relieved, but the right ethmoid had been exenterated a few days later because of persistence of pain over the ethmoid region. The patient had been comfortable ever since, that is, for a period of six months.

Dr. Magruder presented a woman of forty-four years, who, since the beginning of the first menstruation after the birth of her last child, six years previously, had suffered with violent headache, which had only been entirely absent for a few days midway between the periods. She had frequently lost consciousness. Examination of the nose was negative. A year ago both discs were choked and vision

was 5/10 in each eye. A diagnosis of brain tumor had been made. In the last six years the patient had taken on fat to a marked degree. The examination of the fields showed left homonymous hemianopsia. A skiagraph showed no enlargement of the sella turcica, but a shadow in the sphenoid region. (The patient subsequently died just after commencing ether anesthesia for a decompression operation. Autopsy showed a large tumor in the frontal lobe, and a small cyst of the hypophysis)

SAN LUIS VALLEY.

The Society met in Alamosa on January 27th. Dr. Ames of Denver was the invited guest of the Society. The meeting was to have been held on the 28th, but through a misunderstanding Dr. Ames came on the 27th.

Several members were notified by telephone and came. Several came the next day who had not been notified of the change, and, added to this unfortunate incident, the trains were blockaded by snow which prevented many attending. The regret of those present was that more could not have been present to hear the interesting and instructive talk by Dr. Ames. His subject was "The Newer Treatment of Scarlet Fever." He also covered a wide range of helpful hints in Pediatrics, and cheerfully responded to all questions asked by the members present. He left the impression with those present that he was a proficient thinker and teacher. Dinner was served at 8:30.

Those present were Drs. Trueblood and Pollock of Monte Vista, McFadzean of Del Norte, Shippey of Saguache and Davlin of Alamosa. The secretary not being present, no business meeting was held.

L. L. HERRIMAN, Sec'y.

MONTROSE COUNTY.

Our annual meeting was held on the 8th inst. and elected officers as follows: President, Dr. Isaiah Knott of Montrose; vice president, Dr. C. E. Lockwood of Olathe; secretary-treasurer, Dr. S. H. Bell of Montrose; delegate to State Society, Dr. F. Schermerhorn of Montrose; first alternate, Dr. Edgar Hadley of Telluride; second alternate, Dr. Albert H. Good of Pitkin.

We had no paper on this evening, but Dr. Bell reported a case of gangrene of the face in a girl of four years, resulting from cancrum oris. It was a rare case and was generally discussed by all present. Almost the entire face was involved, including the nose to between the eyes. The teeth fell out and the maxillary bones were necrosed. All this destruction occurred within a few days and started from a small point in the roof of the mouth. Two cultures were sent to Dr. Mitchell, but I believe nothing unusual was found. The case followed typhoid fever. Dr. J. W. Collins was the attending physician. It would be interesting to know what could cause such rapid destruction of both soft and hard tissues. The girl was not poorly nourished nor apparently of low vitality. Dr. Geo. E. Newell of Do-

lores, whose wife is a half-sister to the girl, also saw the case. The girl has since died.

Refreshments were served during the evening and the meeting very much enjoyed by all present.

J. Q. ALLEN, Sec'y.

FREMONT COUNTY.

The Fremont County Medical Society met at the office of Dr. R. C. Adkinson January 26th. Drs. Baker and Epler of Pueblo read a joint paper on "Abdominal Adhesions." Dr. Baker read the paper and Dr. Epler contributed illustrative x-ray plates.

The new officers for 1914 were elected as follows: Dr. Hart Goodloe of Cañon City, president; Dr. T. A. Davis of Portland, vice president; Dr. W. T. Little of Cañon City, secretary; Dr. R. C. Adkinson of Florence, delegate; Dr. Holmes of Cañon City, alternate delegate; Dr. L. E. Rupert of Florence, second alternate delegate. Following the business session refreshments were served.

Those present were Drs. Little, Goodloe, Holmes, Wilkinson, Wade, Rambo and Orandorf of Cañon City; Dr. Davis of Portland; Drs. Rupert, Hutton, Cummings and Adkinson of Florence and Drs. Baker and Epler of Pueblo.

WELD COUNTY.

The regular meeting of the Weld County Medical Society was held in the city hall Thursday evening, January 8, 1914.

The newly-elected president being unable to attend, the vice president, Dr. E. W. Knowles, occupied the chair.

It was also a matter of general regret that the retiring president, Dr. D. W. Reed, was absent, so that the installation proceedings were necessarily abandoned.

After reading the committee appointments for the current year Dr. Knowles delivered an address in which he took up the early life, history and environment of the County Society, touched upon its present condition and closed with a prospectus of its future activity.

Following this address Dr. Hughes read a paper on the methods which should be employed to reduce the mortality in surgery, which was well received and discussed.

Before adjourning it was moved by Dr. Lehan that Weld County Medical Society hold regular meetings on the first and third Thursday of each month with informal meetings on the remaining Thursdays. Carried.

The secretary reported a verbal communication from Dr. Philip Hillkowitz of Denver to the effect that he would, in the near future, deliver before the Weld Society his noted lecture, "Wild Germs I Have Known." This offer was received with favor and will be accepted. Meeting adjourned in good order.

The regular meeting of Weld County Medical Society was held in the city hall Thursday evening, January 22nd, with a large attendance of members. After the transaction of routine business the newly-elected president delivered his inaugural address which had been

postponed from the last meeting. The president, Dr. Pogue, was in excellent voice and gave a stirring address on Chemo-Therapeutics.

This had become a science largely because of the work of Ehrlich, who, after 606 attempts, had finally attained satisfactory results in the production of an arsenical compound for the treatment of syphilis, a preparation which would destroy the spirochete and exhibit no derogatory effects on the vital organs. Its method of action and the reason why in some late cases life was endangered, by the rapid destruction of the organism followed by hyperaemia, was satisfactorily explained. In closing he touched upon the recently-advised method of administering salvarsan in combination with autogenous serum, intra spinally, in selected cases where the central nervous system was involved. The discussion was opened by Dr. Lehan and continued by other members after which the meeting adjourned.

CHARLES B. DYDE, Sec'y.

MESA COUNTY.

The Mesa County Medical Society met January 8, 1914, and elected the following officers: President, Dr. Chas. N. Needham; first vice president, Dr. J. U. Sickenberger; second vice president, Dr. J. H. Larson; secretary-treasurer, Dr. R. B. Harrington; delegate, Dr. K. Hanson; first alternate, Dr. H. S. Henderson; second alternate, Dr. H. R. Bull.

Committees for 1914 are as follows: Health Legislation, Drs. G. R. Warner, H. R. Bull, J. H. Larson. Entertainment, Drs. H. R. Bull, J. U. Sickenberger, Chas. R. Woolwine. Censors, Drs. H. S. Henderson, A. G. Taylor, Carl W. Plumb.

The second meeting of the year was held January 22nd. A good paper was read by Dr. Chas. N. Needham on "The Vaccine Treatment of Pertussis." Discussion was entered into by all the members present.

A motion to have the essayist for the State Medical Society meeting selected by May 1st from the men who have read papers before the local society up to that time, was carried.

It was also decided that we will have our meetings in the future on the third Thursday of each month.

CROWLEY COUNTY.

At the meeting of the Crowley County Medical Society, held at Ordway January 13, 1914, the following named officers were elected: President, J. C. Workman; vice president, E. O. McCleary; secretary and treasurer, J. E. Jeffery; censor, Cloyd Workman; delegate to the state convention, J. C. Workman; first alternate, Cloyd Workman; second alternate, E. O. McCleary.

Meetings to be held on the second Tuesday of each month.

J. E. JEFFERY, Secretary.

LAS ANIMAS COUNTY.

At the annual meeting of the Las Animas County Medical Society held January 2, 1914, the following were elected officers for this year: President, E. J. Scannell; vice president, L. F. Richie; secretary, W. M. Ogle; delegate to state society, Ben Beshoar; board of censors, Drs. Scannell, Richie and Ogle.

W. M. OGLE, Secretary.

News Notes

Dr. Livingston Farrand, president of the University of Colorado, assumed the duties of his new office on February 1st. The physicians of Colorado will be pleased to learn of the keen and wide interest of Dr. Farrand in medical work. A catalogue of his important accomplishments and associations would be a long one. By way of introduction to the readers of Colorado Medicine, to the majority of whom his name has long been familiar, it may be mentioned that Dr. Farrand received the degree B.A. in 1888 and the degree M.A. in 1891 from Princeton University and the degree M.D. from the College of Physicians and Surgeons (Columbia) in 1891. The next two years he spent abroad, studying at Cambridge and Berlin. He was appointed instructor in Psychology in Columbia University in 1893, made Adjunct Professor in 1901 and appointed Professor of Anthropology in 1903.

During the past nine years Professor Farrand has been the Executive Secretary of the National Association for the Study and Prevention of Tuberculosis, Editor of the American Journal of Public Health, member of the Board of Trustees and Chairman of the Bureau of Public Health of the New York Association for Improving the Condition of the Poor, member of the Committee on Prevention of Tuberculosis of the New York State Charities Aid Association, member of the Committee on Prevention of Tuberculosis of the New York Charity Organization Society, member of the Board of Trustees of the American Society for the Control of Cancer, Treasurer of the American Public Health Association, and member of numerous scientific societies.

Dr. Thadd Parker, formerly of Grand Junction, has removed to Pueblo.

Fifty physicians of Colorado Springs have formed "The Solly Society" for the purpose of making a united study of tuberculosis. Dr. C. F. Gardiner was elected president; Dr. B. P. Anderson vice president, and Dr. J. J. Mahoney secretary-treasurer. It is rare that a local society is named for a local man. The physicians of Colorado Springs have paid a fine tribute to the memory of their late colleague in naming so important an organization for him.

The City Council of Colorado Springs has limited the number of prescriptions a physician may write on Sunday for whiskey to one. Any druggist who fills more than one prescrip-

tion of one physician for the boosting beverage will suffer a revocation of his license. Hard luck! And we are taught not to prescribe for ourselves!

Dr. Harry N. Krohn and wife of Denver have gone east for three months of study and pleasure.

Dr. R. B. Porter of Fruita has installed a new and excellent x-ray apparatus in his office.

Dr. C. C. Donaldson was married in January to Mrs. M. E. Mortimore. They are at home to their friends at Granada, Colo.

Dr. L. H. Brown, county physician of El Paso county, has named Dr. L. Hombach as his assistant. Dr. Brown intends to select a staff of consultants who shall be from among the best of Colorado Springs physicians.

Dr. Woods Hutchinson lectured in Colorado Springs on February 4th.

Dr. Carl G. Parsons is in Hawaii seeking a recovery from chronic laryngitis.

Dr. S. R. McKelvey, member of the State Board of Health, from Denver, is in Cuba. He has reported to his friends a terrifying experience on the sea that occurred when on his way to Havana.

Dr. F. A. Burton of Denver has returned after several months' absence in Europe and the clinic points of the eastern part of the United States. Dr. Burton will not resume practice in Denver. He intends to locate in San Diego, Calif.

Book Reviews

A Text-Book of Physiology. Fifth Edition, Thoroughly Revised. A Text-Book of Physiology, for Medical Students and Physicians, by William H. Howell, Ph.D., M.D., Professor of Physiology, Johns Hopkins University, Baltimore, Fifth Edition, Thoroughly Revised. Octavo of 1,020 pages, fully illustrated. Philadelphia and London: W. B. Saunders Company, 1913. Cloth, \$4.00 net; half morocco, \$5.50 net.

In this new (fifth) edition of his well-known work on Physiology, Howell has succeeded in bringing it abreast of the developments of the last few years in his special field. This period has been one of important advances and changes in physiological views. Indeed in some of its developments it has justified the dictum of a leading German physiologist that "the life of a physiological fact is but three years."

These changes in view pertain largely to the field of physiological chemistry and its complex problem of body and food metabolism; especially in intermediary metabolism, where great gaps in our knowledge have heretofore existed. The interrelation of the ductless glands is also to the front, together with numerous other obscure problems.

In the present volume full attention is given by the author to the advances which have been made in these later fields of special investi-

gation. In a work so strong throughout, as is this, comparisons of different portions are hard to make, but especial commendation is to be given, as in the previous editions, to the very full and clear exposition of the physiology of the nervous system.

The style of writing is clear and terse; the illustrations abundant and helpful; the material well sifted and the entire work is a credit to one of America's greatest physiologists. It is suited to the needs of the student and practitioner alike. C. B. V.

History of Medicine, With Medical Chronology, Bibliographic Data and Test Questions, by Fielding H. Garrison, A.B., M.D., Principal Assistant Librarian, Surgeon General's Office, Washington, D. C., Editor of the "Index Medicus." Octavo of 763 Pages, many portraits. W. B. Saunders Company, Philadelphia and London, 1913. Cloth, \$6.00 net; half morocco, \$7.50 net.

The importance of a more intimate knowledge of the antecedents of present day medicine for a better understanding of the problems that confront the practitioner is constantly impressed upon us. It is urged not only that members of the profession should give more attention to the history of medicine but that it should be made a part of the already overcrowded medical curriculum, and yet if anyone had accepted this advice he would have looked in vain for a work in the English language covering the subject worthy the name. English speaking writers have contributed largely to the literature of the history of medicine, but they have confined their efforts to special topics or some of the various phases of the subject by monographs, essays, and biographical sketches and left the compiling of general treatises to continental writers.

The general interest with which Dr. Roswell Park's "Epitome" is read, the cordial reception accorded the first volume of Playfair's translation of Neuberger's able and instructive narrative, and the eagerness with which the appearance of the second volume, delayed since 1911, is awaited, may be taken as an index of the need of a general treatise in English and the desire of the profession for better opportunities for the study of medical history.

It has remained for an American, Dr. Fielding H. Garrison, to give his first complete review of this extensive subject in the English language and his most excellent work is therefore very especially welcome. Dr. Garrison has not attempted an exhaustive treatment but rather has aimed to give an "outline sketch" and a guide book to the history of medicine. This task he has accomplished well and in a most acceptable manner. He had compressed into one compact volume an immense amount of information and comment, arranging his subject in chronological order easily accessible for reference. He follows the development of the art and science of medicine from its earliest traditional and primitive state down to the present time, describing briefly the important events of each period. He endeavors to sum up "the best that has been thought and

said" and he treats the various phases of his subject, tradition, medical literature, biography and medicine as illustrated in art with thorough understanding and a correct appreciation. His biographical sketches are concise and frequently illustrated by portraits. Liberal references are given to original authorities and with the appendices and a separate index for subjects and names the student of medical history has here an excellent book of reference and an efficient guide for further study. This work is remarkably accurate, yet a few errors will inevitably creep into a book with so much detail. In a second edition doubtless the data of Plenciz work on scarlatina will be changed from 1162 to 1762, Dr. N. S. Davis will be given his correct middle initial and the date of Bordet's birth will not be omitted.

Dr. Roswell Park in closing one of his most instructive essays says: "As a humble disciple of that Æsculapius who was the reputed father of our craft, I have felt that every genuine scholar in medicine should be familiar with these relations between the past and the present." If we may adopt his remark and extend its application to medical history as a whole, we would recommend that such scholars and all who have ambitions to be such scholars should have Dr. Garrison's book at hand for study and reference.

Dorland's American Illustrated Medical Dictionary. A new and complete Dictionary of Terms used in Medicine, Surgery, Dentistry, Pharmacy, Chemistry, Veterinary Science, Nursing, Biology and Kindred Branches; with new and elaborate tables. Seventh Revised Edition. Edited by W. A. Newman Dorland, M.D. Large octavo of 1107 pages, with 331 illustrations, 119 in colors. Containing over 5,000 more terms than the previous edition. Philadelphia and London: W. B. Saunders Company, 1913. Flexible leather, \$4.50 net; thumb indexed, \$5.00 net.

The appearance of a revised edition of a dictionary is a kind of mile-stone in progress. Words do not multiply unless larger ideas press for expression. The growth of serology, pathologic chemistry and additions to physiology, have made it necessary to revise the "Dorland," which only two years ago seemed to satisfy every need. The addition of 5,000 new words means more than five thousand new facts and many times more than five thousand ways of applying them. All these fresh and welcome recruits to medical knowledge are introduced to us in the sixth edition of "Dorland." The new book is, like its predecessors, of convenient size without the loss of scope and completeness. It will ornament the physician's desk as well as enrich his knowledge.

Marriage and Genetics. Laws of Human Breeding and Applied Eugenics. By Charles A. L. Reed, M.D., F.C.S., Professor in the University of Cincinnati. Cloth. Price, \$1. Pp. 183. Cincinnati: The Galton Press.

The author's purpose in putting forth this book, as he states in his preface, is to "overcome the ignorance which keeps innocent vic-

tims from protecting themselves and their offspring from disease and degeneracy." The book is free of any moralizing or sentimental strain. It is a brief summary of the biologic laws as they have been formulated by Weismann, Haeckel, Galton, Mendel, Carpenter, Spencer, Darwin and Lamarck, freed from unfamiliar technical phraseology, and rendered comprehensible to the lay reader; a brief consideration of the social diseases, and a detailed consideration of the prenuptial eugenic medical examination and of the genetic factors which have so far been studied.

The book is meritorious in that it answers popular inquiry, and will doubtless do much to encourage the awakening "eugenic science." A. D.

MUNICIPAL HOSPITALS.

Rupert Norton, Baltimore, (Jour. A. M. A., Nov. 29), says: "Speaking broadly, it may be said without fear of contradiction that the municipal hospitals of this country are a disgrace from almost every point of view, and do not serve the purpose they should in any respect." The exceptions could be counted on one's fingers. One of the best is the Boston City Hospital, and the worst, considering the city where it is situated, is the Cook County Hospital in Chicago. He mentions a few other institutions that more or less meet the needs, but makes a very damaging comparison between the hospitals of this country and those of Germany. No one will deny, he says, that the reason for our inferiority is in the political conditions of our large cities. Money is wasted by politicians; political control vitiates the management, the positions are insecure and the manning of the hospital does not command the confidence of the public. It is not a difficult thing to show how conditions can be improved. In a very large community separate provisions should be made for the contagious diseases of children and those of adults; for acute medical and surgical cases; for chronic cases; for tuberculosis and for the insane. Norton mentions the special defects in overcrowding, bad ventilation, dirt and various structural inconveniences, and says that only architects with special skill in this line should be intrusted with the planning of our municipal hospitals. Trained employes are of course necessary, and he suggests the supervision of these should be intrusted to a board of trustees, about eight in number, who should act as an advisory board, while the superintendent selected by them should be in sole charge of the administration and he should have the appointment of his higher assistants, which, if thought best, can be ratified by a civil service board, thus excluding political pull. The trustees should also select the medical staff, who, like the superintendent, should be removable for cause. Norton lays some of the responsibility for the present state of affairs to members of the medical profession who have too often lowered themselves to do what politicians have ordered.

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MARCH, 1914

NO. 3

The Committee on Scientific Work is now at work on the program of the state society for the Boulder meeting. Those desiring to read papers should at once notify the chairman, Dr. Aubrey H. Williams, Metropolitan Building, Denver.

SARTOR RESARTUS.

If one may judge from the illustrations which accompany writings about the inhabitants of our new possessions, the "benevolent assimilation" and civilizing influence of our country and its missionaries consists mostly in putting clothes upon naked natives. The measure of progress attained by American rule in our torrid colonies may be measured not by the use of soap, as a widely distributed advertisement contends, but rather by the quantity and quality of the clothing in use.

According to Leonard Hill, the naked black man is not only the original, but the proper inhabitant of tropical regions. The process of evolution has settled him there, and the white man in the temperate zones of the earth. An easy experiment will reveal an important difference between the skin of the white man and of the black. If a light is put into the mouth or held before the hands in a dark room it will be seen that the skin of the white man is far more pervious to light

than the skin of the black man. The spectroscope shows that red, green and blue rays pass through white skin, while only red rays, and but few of these, penetrate a piece of black skin.

Dr. William Lowe has shown that if a mixture of water and melanin, the latter obtained from the eye of an ox, be smeared upon a piece of glass, the transmission of light is so impaired that a match held upon one side of the piece of glass cannot be ignited by transmitted rays which have been concentrated by a lens. The light is converted into heat by the pigment and the heat is lost by the evaporation of the water.

In a very similar way light is converted into heat by the pigment which lies deep in the black man's skin and is dissipated by the free evaporation of perspiration from his naked body without greatly affecting the temperature of the blood. Lowe thinks that the absorbed heat excites the cutaneous nerves and promotes the excretion of the greatly protective perspiration.

Quite different is the condition of the white man. His skin transmits actinic rays which are converted into heat, not in the skin itself, but in the pigment of the blood which circulates beneath it. To overcome this result the white man wears light-colored clothes or khaki with a motive to reflect the actinic rays. The re-

sult is that free evaporation is prevented by enclosing about the body an atmosphere of saturated air.

The white man thus loses the stimulation of varied temperature caused by the play of winds. He becomes disinclined to work, his constant impulse being to restrain the formation of heat by inaction. He needs exercise which he can not take. He eats little, digests badly and becomes an easy prey to intestinal disease. The white man may be useful in directing the work of those better adapted to tropical environment, but in so doing he sits in the shade of awnings and is cooled by an electric fan. He is, then, the black man's burden in spite of the conceited view that circumstances have thrust the black man upon him.

Here, then, science and prudery come into violent collision. In the tropics, at least, clothes will not make the man. From the earliest biblical record the story comes to us that man and woman became ashamed in each other's presence and made crude clothes. This affectation of modesty has been cultivated by every educational device until it has seemed to be the first and most essential evidence of morals and enlightenment. The success at Panama has made it certain that the tropics are to come into more intense use, and the power in their development must be the black man, enlightened and moral, one may hope, but nevertheless—naked.

CARREL AND RADIUM.

A report has been widely circulated in the newspapers of certain experiments with radium performed by Alexis Carrel at the instigation of Robert Abbe. Doctor Abbe is certainly among the pioneers in the use of radium in the treatment of cancer. His results have often been brilliantly successful and have opened new vistas of promise which allure, but, too

often, lead nowhere. Unevenness in the consequences of an experiment is certain evidence of a variation in the circumstances under which the experiment is performed. There are several attributes of radium, more perhaps than our defective senses can discern. We know of several kinds of rays that are emitted by radium. If the effect of these different rays upon living tissue could be exactly determined, one element of uncertainty could be excluded.

The alpha rays are material particles charged with positive electricity. They are comparatively huge and sluggish. In therapeutic use they bombard the tissues with masses as large as the atoms of hydrogen, which travel with one-twentieth the velocity of light.

The beta rays are particles charged with negative electricity. They are small, travel rapidly and are, therefore, more penetrating than the alpha rays.

The gamma rays are wholly unlike the other two. They are believed to be disturbances in ether which are caused by the explosive discharge of the alpha and gamma particles.

These rays are easily separable. The alpha and the beta rays are deflected in opposite directions by a magnet because of their electrical reaction. The effect of each upon living tissue might be readily determined if one but knew more about living tissue. Abbe had exposed seeds to radium and found that many of them were killed and others were capable of but stunted development. This crude experiment had to yield its meager testimony until some one could conduct a better one.

At the Rockefeller Institute Alexis Carrel was conducting experiments in the artificial growth of animal tissue. Two and a half years ago he took a bit of tissue from a chicken's leg and planted it in a culture medium. From time to time he

excised bits of new growth for transplantation. He had produced two hundred and eighty generations of cells. The rate of growth, during all this time, had been carefully watched and measured. He had the growth of tissue standardized under well-defined conditions. Here was an opportunity to try the effect of various agents upon the growth and life of animal cells. After exposing these cell growths to the different rays of radium, Carrel came to the conclusion that the beta rays were the most destructive to new cell growths. The gamma rays, upon which we have heretofore depended in the treatment of malignant tumors, are said to have had no effect upon Carrel's artificially grown tissue. This fact, if it should prove to be such, will greatly limit the use of radium, for the beta rays have little penetrating power, and burn the superficial tissues.

With the results of the experiment, however, we have small concern. The newspaper announcements are, moreover, not to be accepted as our source of enlightenment. What attracts one is that a work which has only provoked smiles begins, at length, to excite more serious attention, and that which seemed useless is being, not only in this instance, but in many others, brought into the harness of service.

Much useful knowledge was in the beginning like floating icebergs—coldly lonesome and divorced from any practical adaptation. Harvey, who laid the very foundation of medicine, expressed the hope that what he had discovered might some day be of use to men. The dust of a century settled upon the discovery of the dependent priest, Mendel, before the eugenist brushed it aside and brought the laws of heredity again to our attention.

INDUCED PNEUMOTHORAX; ITS USE AND ABUSE.*

ARNOLD S. TAUSSIG, M.D., and WM. N. BEGGS, M.D., Denver.

The development of the operation of induced pneumothorax has been very unusual. In 1821 James Carson of Liverpool proved theoretically the advisability and necessity for causing collapse of lung in order to cure tuberculosis. Soon after, Ramadge, an English physician, punctured the chest wall of a patient with tuberculosis, allowed air to be drawn into pleural space, and reported that patient was improved two years later. In 1885 Cayley, an English physician, unsuccessfully tried to cure a severe hæmoptysis by collapsing the lung. In spite of the fact that Cayley's paper on the subject was well received, the method seems to have fallen by the wayside. Potain in France in 1885 treated a few cases of pleural effusions by withdrawing fluid and injecting air, reporting good results. Forlanini, who had been considering the subject of pneumothorax theoretically since 1882, used the method in cases with effusion in 1888, and in 1894 first reported cases of tuberculosis without effusion which had been successfully treated.

During the Denver meeting of the A. M. A. in 1898, Murphy, in his oration on surgery of the lungs, said: "In no field of medicine has the intermittence in surgical effort been so conspicuous as in that of the lungs." In another portion of the address he says: "We ask ourselves what has been achieved in tuberculosis? With the exception of a thorough knowledge of its etiology and pathology, comparatively nothing. He then advocates collapse of the lung as a rational procedure, reporting five cases, in three of which he was unable to report good

*Read at the Annual Meeting of the Colorado State Medical Society, Oct. 7, 8, 9, 1913.

results. Although the technic as employed by Murphy was imperfect, he made a step in advance of Forlanini in that he regulated the pressure of gas as it entered chest and made an incision down to pleura before inserting troear.

Lenke (J. A. M. A. xxxiii, p. 959), continued Murphy's work with success. He reported fifty-three cases in which the results were good. Lenke's death caused the operation to be neglected in this country, and not until the procedure was well established elsewhere did it come in use here.

In 1904 Brauer of Germany, stimulated by Murphy's work, took up the operation and placed the whole subject on a scientific foundation.

Saugman's introduction of the manometer added an element of safety to the operation which had always been absent.

Today, although the Brauer method of incision is rapidly giving place to the Forlanini needle method, we are more indebted to Brauer and Spangler for the position the method holds than to anyone else.

Today, throughout the civilized world, pneumothorax is being induced, and it has established an unquestioned position in the treatment of diseases of the lungs.

We will not consider the technic in this paper, as it has already been considered in the preceding paper, but we wish to emphasize a few points that are of great importance.

The object of the operation is to collapse a lung with sterile gas and therefore the operation should be undertaken as carefully as though we were about to enter the abdominal cavity. An empyema complicating tuberculosis would be as serious a complication as a general peritonitis following an operation on the abdomen.

We must be guided absolutely by the manometer in attempting entrance into the pleural space. The manometer should therefore be tested before each operation. If there are several cases for operation the

old established ones should be first injected, as they will serve as a test for the manometer.

The gas should be slowly injected and if adhesions are present one should be in constant touch with the manometer. An hour may be spent injecting 200 or 300 c.c. of gas, but if one has not the time to undertake this arduous task, the patient is much safer without this operation. One should be as fearful of tearing adhesions in the pleural as in the abdominal cavity.

Up to the present time the operation has been performed almost exclusively in tuberculosis of the lungs, but it should be tried on any disease of the lungs where their elasticity prevents the cure of disease. Such cases are abscess of the lung, bronchiectasis, pleurisy with effusions, painful pleuritis from malignant disease or any painful pleuritis where the basic diseases justify collapse of lung, and in aspiration pneumonia, fetid bronchitis and severe hæmoptysis which is not relieved by ordinary methods.

We will first consider the non-tuberculous diseases of lungs and later discuss more fully the tuberculous diseases.

In abscess of the lung, the views are divided as regards the advisability of performing a pneumothorax. On the one hand we find men like Volkard, who claims that one cannot collapse the lung in these cases without infecting the pleura, which usually ends the history. On the other hand Forlanini reports a case of abscess of six years' standing with pleural adhesions that prevented the injection of more than 50 c.c. of gas at a sitting. This was repeated twice a day and continued for two years with intervals of several months' omission. A complete recovery was demonstrated by x-ray.

One case of abscess of eleven months' duration, with a temperature of 103°, which we saw with Dr. Schwatt, was at first benefited by collapse, but later the

fever again rose and the patient died. At autopsy the lung was found only partially collapsed, adhesions at base preventing the total collapse. Empyema was present. In such cases one should consider the possibility of the compression preventing drainage through bronchus and the collapse not being sufficient to block the lymphatic circulation. The moment symptoms arise which point to such a condition, even though the patient is generally more com-

hand there is less danger of infecting the pleura.

Volhard reports one case in which 100 c.c. of foul-smelling sputum was expectorated daily. Two days after pneumothorax was induced, cough and expectoration ceased entirely. For two and a quarter years the patient was perfectly well while pneumothorax was continued, but on allowing pneumothorax to become absorbed, symptoms returned, and pneumothorax was



NO. 1.—M. S., AGE 29. DURATION, ONE YEAR.

RIGHT SIDE—Very extensive disseminate tuberculosis throughout, specially in the lower third. Heart drawn a little to right.

LEFT SIDE—Broncho-vascular tree unusually distinct throughout. Moderate lesions disseminated throughout.

fortable, unless a collapse can be speedily produced it should be discontinued.

In bronchiectasis the same difficulties confront us. Pleuritic adhesions are the bugbear of the operation. As most of these cases are of long standing the adhesions are difficult to stretch, but on the other

again induced, with relief of symptoms.

Jagie reports a case with expectoration of 250 c.c. which was reduced to 50 c.c. in five weeks by collapsing the lung. Marked clubbing of fingers and dyspnea were both decidedly bettered by treatment, thus proving the toxic origin of both symptoms.

A review of the literature at our disposal would certainly encourage us to attempt a lung collapse in all cases of bronchiectasis where the symptoms justified the risk.

In pleurisy, with effusion, we have repeatedly withdrawn the effusion and injected air or nitrogen through the same needle and obtained a manometer reading before withdrawing needle. The temporary collapse obtained by this method is certainly of value if a large effusion must be withdrawn. A complete withdrawal is possible at one sitting without disagreeable symptoms on part of patient. Whether pleural adhesions are prevented, or the return of the fluid made less likely are questions still in dispute. Forsati and Hochhaus are thoroughly convinced that effusions are less apt to return and adhesions are less likely to form.

We have used this method in one case where hydrothorax had complicated disease of the heart and believe that with this method a patient is made more comfortable and operator more certain to withdraw all the fluid. The gas is gradually absorbed and organs allowed to take new position in chest without risk to patient.

In cases of tuberculosis with effusion, before the effusion is withdrawn a thorough consideration of the advisability of maintaining a complete collapse should take place. If the symptoms of tuberculosis have been but slightly affected by conscientious treatment and the condition of the other lung justifies it, a complete collapse should be induced and maintained over a long period.

The technic of operation is the same as in any pneumothorax operation, excepting that the manometer and gas receptacles are placed in communication with an ordinarily large aspirating needle. A two-way cock enables one to put the chest in communication with vacuum bottle or pneumothorax apparatus at the operator's will.

Then a few hundred c.c.'s of fluid are withdrawn and half that amount of gas injected. After withdrawal of all the fluid, if the manometer still shows a high negative reading, more gas should be injected, until on expiration a slight positive pressure is registered. We have ordinarily used air, but in cases of tuberculosis it is wiser to use nitrogen, because it is less readily absorbed.

Garre reports two cases of severe pleuritis complicating cancer of lung, where the pain was entirely relieved by injections of nitrogen.

Schmidt reports two cases of aspiration pneumonia which were relieved by injection of gas into pleural cavity. The case reports, however, are not convincing. We have not been able to find the report of a case of a foreign body in the lung treated by this method, but in cases in which all attempts at removal have failed and signs of inflammatory trouble have appeared, it would seem that this method of collapse should be tried.

Some brilliant results have followed the use of artificial pneumothorax in severe hæmoptysis. In these cases if one is convinced from which lung the hemorrhage comes, large quantities of gas should be injected at the first operation. At times the presence of adhesions interferes with the operation. The injection of gas should be slow enough to prevent large quantities of secretion being forced into the trachea and from there aspirated into the other lung. This has taken place several times in cases with cavities, and the results have been serious to the patient. Where there are large cavities it is preferable to inject several times in one day, so that the cavities can be gradually emptied.

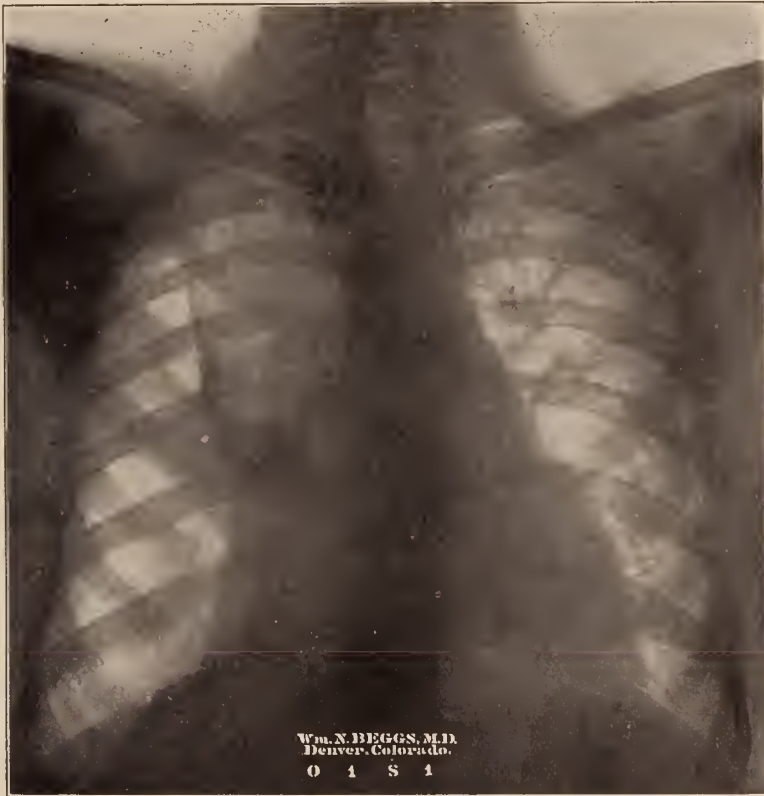
In three cases of severe hæmoptysis in which we considered performing a pneumothorax two had such severe involvement on the opposite side that it did not seem advisable. In the third case a collapse stopped the hæmoptysis.

In the hemorrhage cases, where it is necessary to inject large quantities of gas, one should have the apparatus so arranged that the gas may be quickly aspirated, if cyanosis or dyspnea indicate that the other lung cannot supply the system with sufficient oxygen.

The most difficult problem that confronts us is to select the cases of tuberculosis that may be benefited by the opera-

unilateral cases, but the x-ray will almost invariably show scars of a past fray, or distinct indications of present trouble on the opposite side.

Brauer and Spengler in reviewing 102 cases come to this conclusion: "We have only accepted for this operation patients whose past history and present condition indicate an absolutely unfavorable prognosis. . . . We do not feel, however, that



NO. 2.—M. S., FIVE MONTHS LATER, AFTER 19 INJECTIONS OF GAS.

RIGHT SIDE—Marked collapse of lung with band and thread-like adhesions. Upper portion is converted into a thin sheet adherent at apex. Lower portion converted into a dense mass adherent at base and closely applied to pericardium.

tion. All are agreed that the ideal cases are those where there is considerable involvement of a destructive character on one side which has proved rebellious to usual methods of treatment. These cases are so infrequently seen in Colorado at least that they need hardly be considered. Many of them on physical examination seem to be

the collapse is indicated only in so-called fatal cases. In cases of less severity the operation is sometimes indicated."

Forlanini, who has reported 163 cases, excludes all acute and early cases, and advocates its use in advanced and destructive cases. However, in several of the cases of advanced tuberculosis which were thought

to be unsuitable for the treatment, a spontaneous pneumothorax developed which was continued artificially, and in all of the cases the results were very encouraging.

Jessen gives following indications:

Certain.—(1) severe one-sided disease without or few pleural adhesions; (2) severe one-sided and one-third disease on

After a very thorough perusal of the literature on the subject, and a consideration of our own experience, we feel that the operation should be performed on any advancing case, where there has been considerable destruction of lung tissue, and all available methods of combat have proven futile. The other lung must necessarily be



NO. 3.—J. W., AGE 18. DURATION 8 MONTHS, ACCORDING TO PATIENT

RIGHT SIDE—Extensive lesions throughout most of lung, specially in upper lobe. Large cavity rather indistinctly indicated below clavicle. Thick pleural adhesions. Heart and trachea drawn to right.

LEFT SIDE—Disseminate lesions in and above hilum.

other without destruction; (3) continued hemorrhage without adhesions and no trouble on other side.

Questionable.—Severe disease one side and destructive lesion of lower lobe of other lung.

Contraindications.—(1) severe disease in other side; (2) great many pleural adhesions; (3) severe complications but mild laryngeal tuberculosis does not contraindicate nor does a toxie enteritis.

in condition to assume the additional burden, and the other organs of the body must be free from serious tuberculous lesions.

The reasons that the more experienced operators are so conservative about the procedure are: (1) the danger during the performance of operation; (2) the likelihood of complicating pleural effusions; (3) the uncertainty of the effect on normal lung tissue; (4) possibility of rekindling latent

tuberculous trouble in the other lung. These points can only be referred to briefly in bringing out the possibility of abuse of this treatment.

The sudden deaths which have been reported may be due to gas embolism or pleural reflex. (A most excellent review of this subject has been undertaken by Carl Sundberg.) Although there have been but

mind is that adhesions have been torn and the pleura infected. Hansen reports 18 out of 19 cases in which the exudates were sterile on cultural media but on careful examination showed tubercle bacilli. In some cases of serous exudate the cases are benefited; if purulent, the patient is always seriously damaged.

Although the work of Graetz, Kistler,



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NO. 4.—J. W., 4½ MONTHS LATER, AFTER 20 INJECTIONS OF GAS.

Heart markedly drawn to left. Trachea more nearly in normal position.
RIGHT SIDE—Marked collapse of lung, specially from below. Cavity moderately collapsed, as indicated by change of shape.

few deaths in proportion to the number of cases operated upon, it places the procedure among the major operations and it should be so considered.

The pleural effusions which follow after the collapse may lead to serious results, and they occur in from 30% to 50% of cases. There are various theories to account for the effusions. The most rational to our

Forlanini and others seems to indicate that a lung is able to re-expand after years of collapse, cases have been reported where after but a few months' collapse on autopsy the lung was found to be converted into a mass of fibrous tissue.

In some cases the non-collapsed, slightly involved lung was improved by the collapse of the opposite lung, which is in har-

mony with the work done by Tendeloe. He has shown that a ventilated lung prevents growth of tubercle, but it has not as yet been definitely determined whether this is the cause for improvement or diminution of toxins circulating in the blood. In a certain proportion of cases the non-collapsed lung will show such evidence of renewed activity of an old tuberculous process that

operator is inclined to attempt the procedure on cases in earlier stages. This is a natural sequence of the baffling experiences with pleuritic adhesions. After attempting case after case without getting into pleural space, the next step is to try cases which are less likely to have adhesions. From our own limited experience we are not justified in drawing any



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NO. 5.—L. F. G., AGE 31. DURATION 11 YEARS.

Hemorrhage case; not doing well.
Mediastinum displaced markedly to left.
LEFT SIDE—Marked involvement of upper lobe. Distinct cavities below inner third of clavicle. Faint circular and heart-shaped shadows near base (pleural thickenings?).

the pneumothorax treatment must be abandoned.

All of the above mentioned dangers become less significant if the condition we are combatting is a very serious one, but if the operation is performed on cases with moderate involvement, and but slight activity, every complication will gain in significance.

In spite of cautions to the contrary, each

weighty conclusions, but we feel sure that in the beginning only the most serious cases should be accepted for operation. Later on as experience justifies, cases of less serious prognosis may be attempted.

A thorough understanding between physician and patient should precede the operation, and the patient should be informed that the treatment must be continued for a year or more. The dangers of procedure

should not be exaggerated or belittled, but the unvarnished truth told.

Before the operation the most painstaking examination and review of the history of the case should take place, and if possible there should be consultation. In all our cases we have used the x-ray before attempting a pneumothorax, believing that by so doing we have safeguarded our patient's best interests.

cases which we are handling, the results will usually justify the danger and expense to the patient. Our own experience, though of short duration, certainly has been such that we are encouraged to proceed with the method. In some cases where there was every prospect of a successful collapse, we have been grievously disappointed in not being able to get a manometer reading that justified us in inject-



NO. 6.—L. F. G., 6 WEEKS LATER, AFTER 6 INJECTIONS OF GAS.

LEFT SIDE—Partial but marked collapse of lung above, laterally and below. Adhesions sharply marked above. Distinct adherence of base to diaphragm. Pleural thickenings (?) moved upward and inward and with much deeper and sharper outlines (from foreshortening(?) or collapse of pulmonary tissues about them).

What can we expect from the use of the pneumothorax treatment?

We believe that the reports of the cases thus far should encourage us in the treatment of all cases of advanced tuberculosis. In some cases we may get an astonishing result; in others relief of disagreeable symptoms; in some we will meet with disappointment; but considering the class of

ing gas. In others that seemed to offer but little prospect of successful operation we have had no difficulty at all.

We hope that this paper may help to forestall the abuse of this method. An operation which may be so readily performed, on subjects who are always ready to grasp at straws, is bound to be abused. If but one patient may be saved an unwise inter-

ference we would consider the paper worth while.

At some future time we hope to give a detailed report of our cases.

We wish to express our gratitude to Drs. Collins, Holden, Steiner and Schwatt for the courtesy offered us at their Sanatoria

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LUXURIOUS.

Johnny handed the following note from his mother to the teacher one morning:

"Dere Teecher.—You keep tellin my boy to breathe with his diafram. Maybe rich children have got diaframs, but how about when their father only makes two shillings a day and has got five children to keep? First it's one thing, then it's another, and now it's diaframs. That's the worst yet."—Tit-Bits.

Volunteers are now called for, for the program of the state society. Report at once to Dr. Aubrey Williams, Metropolitan Building, Denver.

THE TECHNIQUE OF ARTIFICIAL PNEUMOTHORAX.*

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In the production of a therapeutic artificial pneumothorax, we are first of all confronted by the choice of two methods for accomplishing the insufflation of gas; namely, the Forlanini, or so-called puncture method, and the Brauer, or incision method. By the Forlanini method a needle is introduced through the soft parts until the point reaches a free pleural space, while, by the Brauer method, an incision is made down to the parietal pleura, after which a blunt canula is introduced through into the pleural space. By this latter method there is, therefore, a visible control of the location of the point of the needle which can be felt and even seen between the layers of the pleura. In both cases gas is allowed to flow in only after the manometer indicates that the point of the needle or canula is actually in a free pleural space.

Before passing some few critical remarks upon the merits of each of these methods it must be clearly understood that the Brauer method is used only for the first insufflation of gas, and that after a partial pneumothorax has thus been established, the re-insufflations are accomplished by the puncture method.

By the Brauer method it is aimed to avoid the most dangerous accident in the production of a therapeutic pneumothorax; namely, fatal gas embolism. Does the Brauer method actually accomplish this end? In reply it may be briefly stated that a review of the fatal cases of embolism reported in literature by no

means upholds this claim. In all the cases reported by Brauer the fatality occurred on re-insufflations, after a partial pneumothorax had already been established. The same holds true of the majority of cases reported by other clinicians. These fatalities, then, might have occurred irrespective of the method employed for the first insufflation. It is furthermore noteworthy that more cases of embolism have occurred upon re-insufflations than upon the first insufflation of gas. From this it would appear that the Brauer method does not obviate the danger of embolism with any greater certainty than does the Forlanini method.

The Brauer method carries with it several dangers and complications. First, there is far greater danger of infection of the pleura. Saugman states that out of 140 to 150 reported cases treated by the Brauer method, there were four fatal cases resulting from infection of the pleura, and, he adds, that these cases outweighed the hypothetical possibility of embolism by the puncture method. Second, by the Brauer method it is far less possible to avoid the unpleasant, though not dangerous, complication of cellular emphysema.

Another important point must be considered. Since it is not possible, either by physical or roentgenological examination to foretell whether or not there is a free pleural space, it may be that upon cutting down to the pleura, we find the two layers so closely adherent that the canula cannot be introduced. All of us who have experience with the production of artificial pneumothorax know that it is frequently only after multiple punctures in various interspaces that we find a free pleural space. Whereas, the patient, as a rule, freely submits himself to these multiple punctures, it is doubtful whether his consent could be obtained to repetitions of the incision method.

There is no question that the Forlanini

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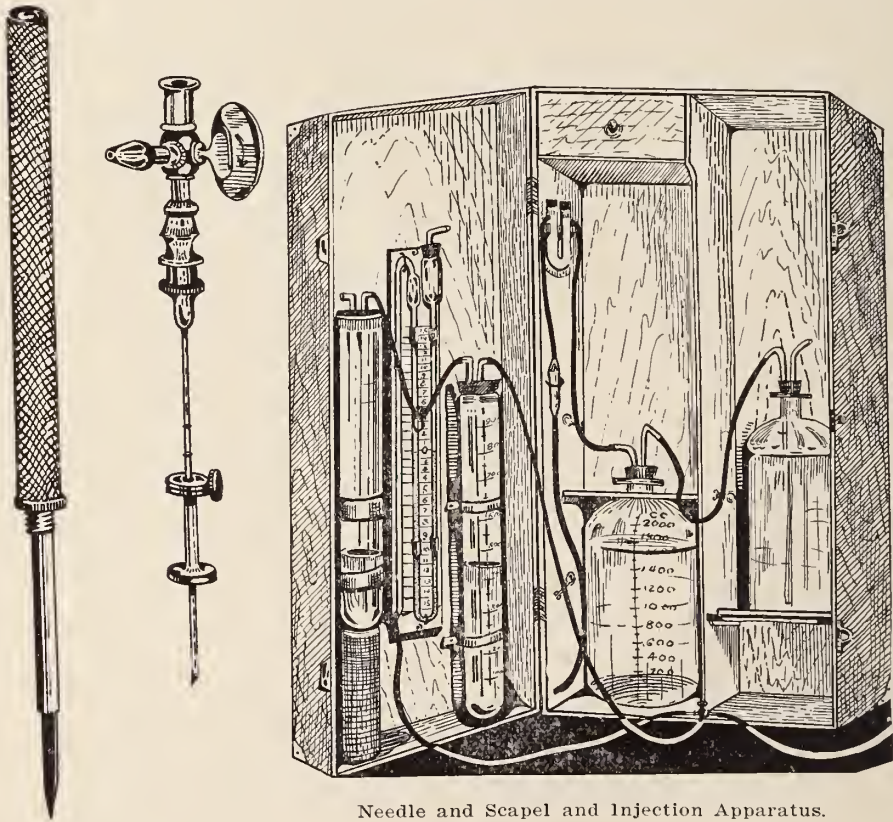
method is the simpler and less painful procedure, and permits of repeated trials. The danger of gas embolism attributed to the Forlanini method may be entirely disregarded provided a proper and careful technique is employed. In all of my cases the Forlanini method has been employed.

The apparatus used for the insufflation of gas consists, essentially, of first, two connected bottles, one graduated and serving as the gas reservoir, and the other containing a fluid by which the gas may be forced out of the first bottle in definite

rect communication with either the manometer or the gas reservoir alone. There are many modifications of the injection apparatus, but all are based upon the same general principle.

Next to the water manometer, which, of course, is the one absolutely indispensable feature of every apparatus, the stop-cock is of great importance. This should be absolutely air-tight in order to insure correct manometer readings.

Just as there are many modifications of the injection apparatus, so there have been



Needle and Scapel and Injection Apparatus.

quantities and under any desirable pressure, and second, of a water manometer, which is the one absolutely indispensable feature of every apparatus. The gas reservoir and the manometer are connected with the needle indirectly by means of a three-way stop-cock which works in such a manner that the needle may be put in di-

rect communication with either the manometer or the gas reservoir alone. There does not seem to be any important advantage of one over the other. The principal requirement is that the point of the needle be semi-blunt, in order to avoid, as much as possible, injury of the lung.

The gas used for the production of the pneumothorax is nitrogen, except for the

first insufflation, when oxygen is always employed. Nitrogen of probably greater purity than that obtained commercially can be prepared in the laboratory by several simple methods.

PREPARATION AND POSITION OF THE PATIENT.

We have made the following conditions an invariable practice:

First, the insufflation of gas is never made shortly after a heavy meal, and second, the patient is always given a hypodermic of one-eighth grain of morphine before the operation. It is needless to emphasize that everything is to be done under strict aseptic precautions. The hands of the operator, the part of the thorax chosen for the injection of gas, as well as all instruments, should be sterile as for a major operation. The patient is placed in such a position that the point of the thorax chosen for the puncture is the highest in a vertical direction. One should aim to obtain the widest separation of the ribs, which may be accomplished by placing a pillow, rolled up, under the chest. I find it indispensable to have several assistants in the administration of the gas: one whose entire attention is devoted to the manipulation of the apparatus, a nurse to take careful pulse and respiration readings after each measured amount of gas injected, and a third assistant to record the manometer readings, the amount of gas injected, and the pulse and respiration. I cannot see the possibility of the operator manipulating both the needle and the apparatus as has been proposed.

After the patient has been placed in the proper position, and the field of operation prepared, an injection of novocain and adrenalin is made down to the pleura. The point of puncture is painted over with iodine, and, with a sharp, narrow scalpel, a stab incision is made down to the pleura. The stop-cock, being turned so that the needle is in communication with the man-

ometer only, the needle is pushed through the tract of the incision until it is shown by the manometer reading that the point has reached a free pleural space. Only after it has been definitely established that such is the case, is gas permitted to flow in. What, then, are the manometer readings which establish the position of the needle? A study of manometer readings obtained under varying conditions would in itself furnish a lengthy subject for discussion. Suffice it to say that as soon as the point of the needle comes into communication with the pleural space there occurs a separation of the layers of the pleura, and as a result of the elasticity of the lung, a negative pressure is established in the locality of the needle, and a slight quantity of air is aspirated from the manometer. We then find that there is established a negative pressure in the manometer with oscillations, corresponding to the phases of respiration. This negative pressure is always stronger during inspiration than during expiration. As a further safeguard the patient is instructed to hold his breath after a moderately deep inspiration. If the reading remains negative, and the column of fluid in the manometer remains stationary upon this, it may be safely assumed that the point of the needle is within the pleural space and nowhere else. The amount of negative pressure and the extent of the oscillations vary with the depth of the respirations and principally with the extent of the free pleural space. In cases where the needle enters a pocket completely or partially walled off by adhesions the negative pressure will be low and the oscillations of small extent. Quite frequently no manometer readings can be obtained on account of the lumen being clogged by some particle of tissue. In such a case it is advisable to pass a wire through the needle, and very frequently we find that this simple procedure gives us the desired reading.

As has been stated, it is not always possible to reach a free pleural space on the first puncture, nor after multiple punctures. In my cases the following conditions have been met with:

On the first puncture.....	10 cases
On the second puncture.....	5 cases
On the third puncture.....	3 cases
On the fourth puncture.....	5 cases

After having ascertained that the needle is in a free pleural space, gas is allowed to flow in, first under negative pressure, and gradually increasing the pressure to positive. This is a precaution which should be taken by all beginners in this treatment, and if one has not thoroughly mastered the interpretations of manometer readings. After each measured amount of gas preferably not larger than 100 c.c., the manometer reading should be taken. With the injection of gas we obtain another satisfactory indication of the position of the needle. If it is in a free pleural space we find a steady rise in the pressure and frequently a lessening of the extent of the oscillations as the gas is injected. The practice of injecting large amounts of gas—of 1,000 c.c. or more—at one insufflation, and particularly at the first sitting, should be utterly condemned except in cases where the purpose is to collapse a cavity which is the source of profuse hemorrhages. It must be kept in mind that the other lung must take up the burden of the collapsed lung, and that the slower this is brought about, the less likely for a dormant process to become active, and for the aspiration of secretions from cavities in the collapsed lung into the other lung. As has been stated, it is impossible to foretell the exact extent of adhesions until a partial collapse has been obtained. By injecting large quantities of gas there may take place a forcible separation of adhesions which is always dangerous, and particularly so in cases with superficial cavities. The amount of gas injected should further be governed by the subjective symptoms of the patient. If pain is complained of, the

insufflation of gas should proceed slowly and in small quantities. The position of the mediastinum should serve as another guide for the amount of gas injected. Too great displacement of the mediastinum should be avoided. The writer never injects more than 600 c.c. at one sitting, and on the first one or two insufflations, frequently but half that amount.

After the desired amount of gas has been injected, the site of the puncture is sealed with collodion. The technique of the re-insufflations is the same as described above. The second insufflation is usually made on the following day and the intervals between insufflations are gradually increased as a pneumothorax is being established. Too long an interval should not be allowed to elapse between re-insufflations, particularly before a fair degree of collapse has been obtained, or where the more quickly absorbed oxygen is used.

To illustrate this, I wish to mention briefly the following case:

Patient admitted September 1912. Confined to bed practically continuously with repeated hemorrhages. On June 25, 1913, it was decided to collapse the right lung. Insufflations of gas were made on the 25th and on the 28th, a total of 700 c.c. being introduced. The final reading was +30 +7. Patient began to spit blood, and on July 7, while still spitting blood, 350 c.c. were injected, with a final reading of —5 +20. On account of continued hemoptysis and the development of fever lasting six days, patient refused further treatment. A month later patient requested that the treatment be continued. Seven punctures were made with practically no success. A few times it was thought that a free pleural space had been entered and 25 to 50 c.c. were allowed to flow in. The readings became strongly positive, rising to +50, and it was thought unwise to continue. On September 8, 500 c.c. were injected slowly on account of strong positive pressure.

On the 10th, 125 c.c. were injected, the pressure rising to +55. On the 11th and 12th, three punctures failed to enter a free pleural space. On the 16th, 450 c.c. were again introduced slowly on account of high pressures, the operation taking one hour and six minutes. Since then three punctures have proven negative.

I have met with similar phenomena in three other cases. In one case, on the third puncture, 200 c.c. of gas were injected. The pressure rose to +40 +20. Subsequently more punctures have been made without finding a free pleural space. In another case 500 c.c. were injected on the third puncture. Three days later 200 c.c. were injected; the pressures were very high and the patient complained of pain on the gas flowing in. Three subsequent punctures resulted without entering a free pleural space. In the third case, gas was injected as follows:

1st puncture, 75 c.c.—doubtful reading.
2nd puncture, 125 c.c.—final reading, +15 +30.
3rd puncture, 200 c.c.—pain, +20 +35.
4th puncture, 150 c.c.—severe pain, +45.
5th puncture—no reading.
6th puncture, 125 c.c.—pain, final r'd'g, +30 +48.
7th and 8th punctures—no reading.

At the Sanatorium of the Jewish Consumptives' Relief Society it has been the practice to obtain x-ray plate before starting on the treatment.

As has been stated previously, the x-ray plate does not give us the information most desired; namely, whether it will be possible to find a free pleural space, nor the extent and the nature of the adhesions. The x-ray plate taken before the treatment is begun gives us information as to the extent of the disease in both lungs and the location of large cavities.

Whether or not it is important, more than as a record of the case, to have an x-ray plate before the treatment is begun, the value of frequent x-ray plates in the course of the treatment cannot be overestimated. These plates inform us of the state of collapse, of the extent and nature of adhesions, and serve as a guide as to the

quantity of gas to be injected. Of greatest value are the stereoscopic plates.

ACCIDENTS AND COMPLICATIONS.

Gas Embolism.—This is the bugbear of the pneumothorax therapy, and, as has been shown, it cannot be absolutely avoided by any method for reaching the pleural cavity, either on the first injection of gas or on re-insufflations. The best safeguard against this fatal accident is not to permit gas to flow in before it is definitely ascertained that the point of the needle is in a free pleural space. And in this we are guided solely by the manometer, hence the necessity of having a thorough knowledge of manometer readings under various conditions. Everyone who is doing this work has found himself confronted with manometer readings which would indicate that the point of the needle is in a free pleural space and which, however, are not typical and characteristic. It is under such conditions that the greatest caution must be exercised. It is here that we must not permit our desire to insufflate gas to lead us into dangerous regions. It is well in these cases particularly, and in all cases on the first insufflation, to use a safety syringe, by which it can be determined whether the needle is in the lung, in the pleural space, or in a blood vessel. In several of my cases it was thus determined by the aspiration of blood into the lumen of the needle that the point had probably entered a blood vessel. By using oxygen for the first insufflation the danger of gas embolism is said to be still further lessened, it being held that the entrance of oxygen into a blood vessel, although it may cause symptoms of embolism of varying severity, might not result fatally, whereas the unabsorbable nitrogen gas might produce severe symptoms and death.

In cases with adhesions, where one is forced to work under pressure, it is advisable to use oxygen until there has occurred a partial separation of the adhesions.

It is only by observing a careful technique and by testing by all known methods the position of the needle that fatal gas embolism can be avoided.

SHOCK.

Some cases of fatal shock have been reported in literature, but it is extremely doubtful whether death in these cases has been due to this cause. It is more probable that these deaths have been due to embolism. It is even claimed by several authors that the pleural shock we meet with is frequently the result of very slight and passing embolism. The symptoms of shock have been ascribed to heart disturbance, displacement of the mediastinum, kinking of the large vessels, and too heavy strain on the right ventricle as a result of too high pressure in the pneumothorax. In several of my cases there appeared symptoms in the course of the insufflation of gas and particularly afterwards, suggestive of pleural shock. In three of my cases this was quite pronounced and manifested itself by rapid pulse, pallor, dizziness and fainting. This symptom may be expected particularly in patients who are very nervous. It is best avoided by giving an injection of morphine before the operation, by thorough local anaesthesia down to the pleura, and by not permitting the patient to assume an erect posture quickly. Both on account of the possibility of embolism and pleural shock, one should always have on hand camphor in oil and digalen for immediate hypodermic use.

In two of my cases, after the needle had entered a free pleural space as evidenced by characteristic oscillations of the manometer, and before gas was injected, the patients developed severe pains in the chest, a feeling of marked pressure in the side operated on, and alarming difficulty in breathing. In one of these a puncture was attempted the following day with the same results. On the third day both patients were given a double dose of morphine and

in each case 600 c.c. of oxygen were injected without difficulty. Both patients were very nervous when the first punctures were made.

EMPHYSEMA.

This is of frequent occurrence, disappearing gradually and without causing great inconvenience to the patient. Of special import is the so-called Hals-emphysem. It is a deep emphysema extending to the neck. In some cases, as in two of mine, it may cause symptoms alarming to the patient by difficulty of swallowing. As a general rule, however, this form of emphysema also passes quickly. Hals-emphysem is considered by some as a bad prognostic sign. It is stated that it is only exceptionally possible to obtain a complete collapse in cases who have developed emphysema of the neck in the course of treatment. In several of my cases this has not proven to be so. In my cases a slight or moderate superficial emphysema occurred quite frequently, especially in cases subject to severe cough. In five cases there occurred varying degrees of emphysema of the neck. In one case the emphysema which is usually confined to the same side, extended to the other side and to the abdomen. In another case to the arm, down to the wrist.

In four cases emphysema occurred after the first puncture had resulted unsuccessfully; i. e., before any gas was injected. In one of these cases the emphysema extended from the neck to the groin and was very marked. In these cases the needle had entered the lung. All of these cases were subject to severe paroxysms of cough.

In cases with severe cough it is well to administer a cough sedative and to make some pressure over the point of the puncture by means of a phial and adhesive plaster after the injection of gas. Where the emphysema is due to puncture of the lung, it cannot be avoided by this procedure.

EFFUSION.

This has occurred in two of my cases. In both it was accompanied by a febrile period, in one lasting about one month, in the other twelve days. In the first case the fluid was moderate in amount, was detected after the fifteenth insufflation, was not aspirated, except 12 c.c. for examination, and has not increased in volume since September 1. In the other case 950 c.c. of fluid was removed by aspiration; a certain amount was left which was detectable by succussion until September 13. On September 18 no fluid could be detected by succussion. In this case the fluid appeared after the eleventh insufflation. The pathology of effusion is doubtful and we have no means of avoiding this complication.

When the needle enters the lung traces of blood may appear in the sputum. This occurred in eight of my cases and is, as a rule, of no particular moment.

GENERAL OBSERVATIONS.

The subject of induced, or artificial, pneumothorax, is extensive. In my remarks I have barely touched upon a few of the important features. I have made no attempt to enter into a discussion of the cases suitable for this treatment, of the pathology of artificial pneumothorax, or the results that may be expected, and of many other matters of great importance. The treatment of pulmonary tuberculosis by means of artificial pneumothorax has been pronounced the greatest advance of medicine within the last fifteen years. Favorable, and even brilliant results have been recorded. The results so far obtained by me in the Sanatorium of the Jewish Consumptives' Relief Society are, in the majority of cases, extremely encouraging, and, in some few cases, such as could not have been expected by any other known mode of treatment in pulmonary tuberculosis.

In all, we have undertaken the production of an artificial pneumothorax in 33

cases. Of these, 8 cases have been given up, after multiple punctures:

After 21 punctures	1
After 14 punctures	1
After 12 punctures	1
After 11 punctures	1
After 8 punctures	1
After 7 punctures	1
After 4 punctures	2

These include four cases which I described above and in which, at one time or another, gas was injected in small quantities.

In several of these cases I have requested Dr. Shere to attempt a Brauer operation.

One case has refused treatment after the first insufflation on account of pain.

Twenty-one cases are under active treatment.

One case was referred to us from the Chicago Fresh Air Hospital.

One case, of lung abscess, diagnosed ante-mortem by Dr. Shere, died. Post-mortem examination by Dr. Hillkowitz confirmed the diagnosis and showed a practically complete collapse except where the multiple abscesses were located.

The first pneumothorax was attempted in a case of long-continued and severe hemoptysis. Patient had recurrent hemorrhages for seven to eight weeks. His condition was extremely unfavorable. The first injection of gas was given at the Sanatorium by Dr. Holden on December 21, 1912. In this case Dr. Holden also gave the second injection. Four subsequent injections were given by myself. A complete pneumothorax was obtained. Hemoptysis stopped after the third insufflation. The other lung was extensively involved, and the patient died from asthenia on February 7, 1913, ten days after the last insufflation.

A preliminary of some of these cases will shortly appear in the New York Medical Journal.

In conclusion I wish to emphasize the following points:

First, the production of artificial pneumothorax should be considered a serious

operation and should not be undertaken without at least a thorough knowledge of the technique and of manometer readings particularly.

Second, even in the most suitable cases the patient should be fully acquainted with the dangers and disappointments of this treatment.

Third, I wish to make a plea for the production of artificial pneumothorax as a therapeutic measure in earlier than otherwise hopelessly advanced cases.

From the large autopsy material at the Sanatorium of the Jewish Consumptives' Relief Society we find in practically every one the one great stumbling block to the successful collapse of a diseased lung; namely, obliteration of the pleural space of varying degrees. Why wait until this has taken place? If there be any therapeutic value in artificial pneumothorax, it should be undertaken in earlier cases. Although the results as to the alleviation of symptoms might be less brilliant, we might, in the long run, save more lives by this procedure undertaken in time.

DISCUSSION.

G. B. Gilbert, Colorado Springs: These are two very timely and interesting papers and ought to bring out some good discussion. It seems to those of us who are interested in internal medicine, and particularly in tuberculosis, that the reintroduction of the artificial pneumothorax treatment with greatly improved methods is a very important thing, and one the value of which will be decided only after a few years. Only reports of large series of cases treated over long periods of time can give a definite idea as to the ultimate value of this procedure.

During the past year and a half in Colorado Springs Dr. Webb and I have given this treatment in a series of fifty-one cases, and during that time we have given about five hundred injections of air—air in almost every case. In every case the lesion was far advanced and the symptoms very pronounced.

Of the fifty-one cases, forty-nine were treated by the Forlanini method and two by the Brauer. In the first group we have ten cases in which we have partially or entirely failed to produce pneumothorax, owing to extensive adhesions. Group two, advanced with a cavity, and the other lung involvement not very serious, twenty cases. Of these twelve received remarkable benefit, with loss of fever, sputum and cough.

Two received some general benefit; two very slight, and four no benefit whatever. Group three, seventeen advanced cases with the other lung involvement very serious; three received a fair amount of benefit; five less benefit; four very slight benefit, and four no benefit whatever. Two cases of severe hemorrhage recurring over a period of many weeks were treated. In both the hemorrhage stopped at once, after two or three treatments. One patient died of extensive tuberculosis after the hemorrhage ceased. One case of lung abscess following the swallowing of a tooth several years before in which there was excessive discharge of pus and constant cough, was apparently cured after four injections.

Of the two cases treated by the Brauer method after the other method had failed, one was an absolute failure. The other received slight benefit from a partial pneumothorax, which had to be discontinued later because we could not get into the pleural space after a period of four weeks without a treatment. In five cases we had pleurisy with effusion. That is, one in eight, or about fifteen per cent., which is a very low percentage. Eight out of the forty-one which were wholly or partially collapsed are now dead. Three cases completed their own pneumothorax, and that is a very dangerous complication. We had one case of broken rib, another very unusual complication, due to severe coughing after the complete pneumothorax. We have found it very essential to treat all cases where the involvement of the other lung is serious like typhoid patients. Occasionally the cavity is held open by adhesions and our efforts are without beneficial result. On the whole we believe the method has come to stay, that the danger is not great and that the results obtained are worth the effort.

Dr. Schwatt stated that he liked to have three or four assistants. This is a very good plan if you work in an institution, but when you are out in private homes, very often it is necessary to do it alone. We have been able to do this without any trouble in a great many cases.

The question as to whether one should use nitrogen gas or air has seemed to us of special interest. Dr. Taussig stated that it was always wiser to use nitrogen. I do not think this has ever been proven either clinically or experimentally. The use of nitrogen in private practice certainly complicates the procedure. Theoretically, owing to the rapid diffusion and absorption of gases, it should make but little difference. This we have tried to prove recently by analyzing a sample of gas removed from every case before refilling. The analyses were made by the use of Haldane's gas apparatus. A tank of supposedly pure nitrogen obtained from a chemical company when analyzed was found to contain 14 per cent. of oxygen. After this we made our own nitrogen before each injection, and numerous analyses showed it to be from 98.4 to 99.6 per cent. pure. In this way over one hundred samples of gas taken from air and nitrogen treated cases at periods ranging from one to forty days after filling have been analyzed. In general the longer the

time the higher the percentage of carbon dioxide and the lower the percentage of oxygen, the former tending to reach ten per cent. and the latter from one per cent. to zero. During the first week or so the oxygen percentage averaged six and the carbon dioxide percentage also near six in both types of cases. The percentages in the two types of cases ran parallel and no essential difference could be noted. In fact the man who analyzed the gas sample could not at any stage tell whether the patient had been treated with pure nitrogen or pure air. We are still collecting data along this line and using air as a general thing.

Herman Schwatt, Edgewater: I want to say a few words in regard to the indication for the treatment. Various rules have been laid down by men of wide experience in this work. Most agree that the ideal cases are those of unilateral lesions. However, after the disease has existed for a number of years, as in cases which come to us for this treatment, the other lung is always affected. I believe that purely one-sided lesions in advanced cases of tuberculosis are extremely rare, if they exist at all.

The indications for this treatment are constantly widening, and today a certain degree of involvement of the other lung is not a contraindication. Many authorities advise not to wait until the case has become hopelessly advanced. It is advocated in early stages of the disease, which progresses rapidly under the usual hygienic-dietetic and specific treatment.

Of the cases treated at the sanatorium of the Jewish Consumptives' Relief Society, all have lesions of various degrees on the other side. All have been doing remarkably well, and in no instance, so far, has the disease progressed or become more active as a result of the collapse of the other lung. It must be said, however, that where there is more or less disease on the "healthy" side, greater care and experience is necessary in the treatment.

As far as the abuse of the treatment is concerned, by applying it to unsuitable cases, I feel that those with experience in artificial pneumothorax therapy are rather inclined to err on the side of too much caution. I believe that many of us are rather too much impressed by the classical indications and reject cases that would be greatly benefited, at least, by this treatment.

Arnold S. Taussig, Denver: In regard to the question whether air or nitrogen should be used, I think the subject has been thoroughly investigated and practically all the physicians who are performing this operation are using nitrogen. For three months Dr. Beggs and I used air instead of nitrogen, but we found that the compression was maintained better by nitrogen, as was demonstrated by the manometric readings and X-ray plates.

Whether the Brauer or the Forlanini method should be used is a subject which has been so thoroughly threshed out and the literature is so accessible that we will not consider it here. We feel convinced, however, that if the chest has been punctured fifteen or twenty times in different locations without obtaining a sufficient manometric reading to justify one in pro-

ceeding with the pneumothorax even if the Brauer method enables us to enter pleural space and get a reading, the pneumothorax obtained will not be of sufficient size to justify the procedure. In selected cases the Brauer method may be used with benefit.

The collapsing of the lung is only the beginning of the treatment. The maintenance of the collapse over a long period is the essential point. The absence of expectoration, the loss of fever, etc., are insufficient grounds for discontinuing the treatment. If the cure of the tuberculous foci is the aim of the physician, the collapse must be maintained for a year or more.

Dr. Murphy in his first report said: "In very few of my cases was it necessary for me to inject more than once or twice." In many of these cases there **must** have been a discouraging return of symptoms after the collapsed lung expanded. The method naturally fell into disuse and did not again come into use until it had been demonstrated by Forlanini, Brauer, Spengler and others that a lung should be collapsed over a long period, and that even though collapsed for years, it could re-expand.

Forlanini reports a case of tuberculosis where the right lung was collapsed for seven years. At that time, although the right lung was collapsed and patient doing well, the left lung showed signs of active trouble. It in turn was collapsed and the patient, at last accounts, was doing well. This and many other cases that might be cited go to prove that a lung collapsed for a long period may still retain its power of expanding and functioning.

The natural question to ask is, will a patient be content to have a needle thrust into his chest once a month over a period of a year or more? Our experience makes us believe that in the majority of cases the patients are anxious to have the gas reinjected. They feel so much better that they usually ask for the treatment before we feel it should be used.

There is no doubt in our minds that in selected cases the operation is of great benefit, but the natural tendency to try the operation in cases in the earlier stages of the disease in order to avoid pleural adhesions, will lead to unfortunate results. The consensus of opinion is that only in advancing cases where there is much destruction of tissue should the method be used.

The work reported by Sauerbruch and other noted surgeons leads us to hope that in the future the cases that have not been helped by pneumothorax will be benefited by thoracoplasty. In some cases the division of a few adhesions may enable us later on to continue successfully a pneumothorax.

We certainly have reason to believe that many cases of tuberculosis, once given up as hopeless, can be benefited or cured by pneumothorax.

William N. Beggs, Denver: Dr. Schwatt has spoken of the necessity for assistants. I agree with him to a certain extent. I think no case, excepting an emergency case of hemorrhage in pulmonary tuberculosis, should be submitted

to this treatment without at least a consultation and the assistance of the man who consults with you, both for the division of responsibility as well as for the trained assistance and easier manipulation of the instrument.

For the same reason I believe that no case excepting an emergency case of hemorrhage should be given this treatment without preliminary X-ray examination. I have seen cases, and I showed you a plate, in which the case was recommended for this treatment but rejected on the evidence of the X-ray plate. I am ready to defend the rejection by an analysis of that plate. These plates had to be hurried over, and there are very many details in them which I have not the time to point out on this occasion.

There may be some question as to whether even with a rather free pleura you always get an oscillation the moment the needle penetrates the parietal pleura. It may be possible that there is such adhesion, not cohesion, but adhesion, between the two layers that the needle goes right on through. That is particularly the case if you use a sharp needle. I believe that in the first operation, therefore, sharp needles should not be used in any case. After one has gotten pneumothorax one may use a sharp needle. The oscillation even to some considerable extent does not prove that a pleural space of considerable size has been entered. The last case in which we tried we got a manometric reading of 40 cc. of water pressure; that is, twenty above and twenty below, and on the addition of, I believe, 25, possibly 50, cc. of nitrogen gas, a rather high positive pressure instead of negative pressure. We either got into an adhesion or very small pocket, and we could not go any further. The next day we got into the pleural cavity and had no difficulty in introducing the required amount of gas.

There is some confusion on the question of embolism and pleural shock. I do not believe that it can be settled definitely in every case. I have had what certainly was not embolism but pleural shock in cases in which no gas was introduced, and there are cases on record where the patient has died from what must have been pleural shock, because no gas had been administered. For the present, on this account, I believe that always, for the first time at least, an injection of morphine should be given a sufficient length of time before the operation to reduce the dangers of pleural shock.

I think one of the greatest abuses that we are going to see in this method of treatment is the constant encroaching upon earlier stages of the disease on the part of operators. I believe that we must be very careful about that, because we do not know how much destruction of tissue by the formation of bands and of fibrous tissue we are going to get in what are normal parts of the lung. Therefore we are not justified in permanently putting out of commission a lung which has not a very great deal of trouble in it and in which all of the ordinary methods of treatment have not been tried already, but simply for the convenience

of the patient, the patient wanting to get well quicker. We are not justified in following such a course.

While the ideal case is a unilateral one, a moderate amount of involvement in the opposite side is not an absolute contraindication, particularly if it is not specially active. I can speak from personal experience there, although my own case was not an induced one. Eight years ago, sixteen miles from this town, I had a spontaneous tubercular pneumothorax, and spent two days here in the hotel, was taken home on a stretcher, came pretty near dying, but I recovered from the pneumothorax, and likewise from the tuberculosis. The pertinent suggestion in this case with reference to bilateral involvement is this: An X-ray plate taken a year ago shows quite distinctly a disseminated tuberculosis through the other lung, which, of course, is now healed up.

CLEFT PALATE.

T. E. CARMODY, M.D., DENVER.

In looking over the literature relating to cleft palate, one is struck with the multiplicity of operations and modifications of the same, all of which goes to prove that no one of them is an entire success, even in the hands of skilled surgeons. This would be discouraging, and would deter even the boldest, if it were not for the fact that he sees some almost perfect results, and furthermore when he sees the same successes and failure in surgery of the other parts, especially of operations on the urethra and vagina.

However, the surgeon of today does not, as a rule, follow blindly in the steps of his teacher, at least the successful surgeon does not, but he operates one case by one method, and the next by an entirely different one if necessary. The man who attempts cleft palate work must be able to adapt any method to the case in hand, and very frequently is called upon to use judgment as quickly as the one who deals with emergency cases. If he be unable to do this he had much better leave cleft palates alone.

The theories as to the cause of cleft palate have undergone little change in the last twenty-five years, and all are

dependent, to a certain extent, for proof or disproof in individual cases on the order of development of the bones of the face.

The maxillary processes with the fronto-nasal process, which go to form the superior maxilla, fuse at a later date than the mandibular cartilages. The face, being developed from above and below, with the mouth as the last part to be completed, is probably the reason for our finding a greater number of deformities here than in other parts; and, as the exterior of the face and interior of the mouth are so closely associated in development, the wonder is not that so many cases of cleft

the end of the third week of foetal life we note the first appearance of the oral cavity. This is formed by the anterior cerebral vessicles bending over the end of the notochord, the primitive buccal cavity appearing upon the ventral aspect. This cavity is not formed so much by an enfolding of the epiblast, as by an outgrowth of the processes surrounding which go to form the face. The cavity is, as stated above, bounded above and behind by the cephalic flexure of the anterior cerebral vessicles, while inferiorly it is separated from the cephalic portion of the intestine by a membranous septum, known as the oral plate. This latter is perforated about the eight or ninth week, establishing communication between the primary buccal cavity and the anterior end of the intestine, which later becomes the pharynx.

The opening, exteriorly, which is on the anterior surface, is stellate (Fig. 1) owing to the angles formed by the joining of the different processes. This changes about the sixth or seventh week to a transverse cleft. The reason for this change is due to the fact that the first pair of post oral branchial arches with the precursors of Meckel's cartilage and from the anterior portion of which the mandible is formed, while the posterior is transformed into the malleus unite in the median line. Anything interfering with this union would produce a median cleft of the lower lip and jaw, which cause, please note, must be active some time prior to the sixth or, at the latest, seventh week. The development of the soft parts around these arches form the chin and lips, and from the tuberculum impar behind the midportion the anterior part of the tongue.

We have taking place, during this time, the development of the organs of special sense, with which time and space will not permit our detailing. However, the association of the nasal cavity with the mouth

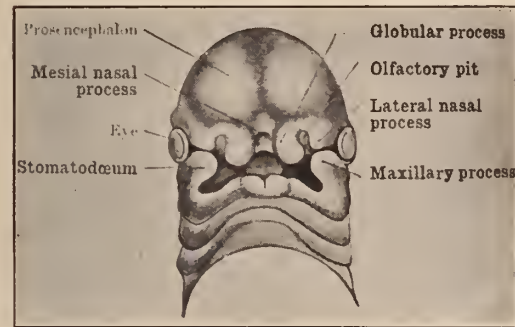


Fig. I.
Embryo of 29 days. From Berry and Legg.
After His.

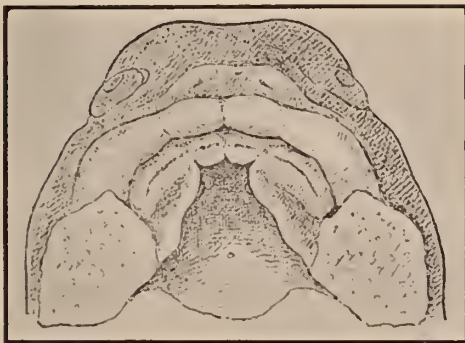


Fig. II.
After His. Showing development of palate in
embryo of about two weeks.

palate are associated with hare-lip and vice versa, but that all do not include both.

To follow this more exactly: at about

in these conditions requires some explanation.

As the mandibular arches grow forward during the third week, from their upper margin, in the posterior part, appear processes which grow forward and become the maxillary processes from which the maxilla proper is developed, and in which all the molars, premolars, or bicuspid and cuspids are eventually developed. At the same time, above and in front, there appears a process which grows downward and is known as the fronto-nasal process. From this is developed the premaxilla and central portion of the upper lip, the nose, including the ethmoid and vomer bones, and the quadralateral cartilage.

Appearing about the fourth week in the lateral portions of the fronto-nasal process, we notice two small pits, which are the primitive nostrils, and their growth is backward towards the mouth. In their extension backward they divide the nasal process into three parts, the median and two lateral. The median still contains the portion of the premaxillary from which are developed the central incisors, the central portion of the upper lip, and that portion which later becomes the nasal septum; while the lateral processes later become the ala of the nose, and forms that portion of the jaw which later contains or in which are developed the later incisors if such be present.

As the nose grows forward, during the fifth week there appears at each lower angle of the median process a spheroidal enlargement known as the globular process which forms the midportion of the upper lip or philtrum, and in the middle portion between these the columela which later becomes the septum, and outer portion the dorsum of the nose. If, for any reason, the globular processes should be prevented from uniting, we would have that rare deformity known as median hare-lip, or if these processes fail to de-

velop there would appear a flattened nose, due to lack of support of the septum, and a wide cleft between the maxilla, due to lack of premaxilla and central portion of the lip.

About the sixth week union between the later nasal and maxillary processes takes place, thus completing the external nose, as the lateral processes form the ala, and the lateral portion of the lip is formed by the external portion of the maxillary process. Therefore, interference with development, to produce a hare-lip, either double or single, must be active before the latter part of the sixth week.

After the union of the fronto-nasal and maxillary processes, we have, growing backward from the globular processes, a shelf which becomes the anterior portion of the palate and the floor of the nose and completes the premaxillary bone. From the maxillary processes, at the same time, there grows inward a shelf-like process which eventually meets its fellow of the opposite side, and forms the remainder of the palate, being the palate plate of the superior maxilla, the horizontal plate of the palate bone and the soft palate (Fig II.) This union takes place from before, backward, the space left between the premaxillary and the maxilla proper becoming the anterior palatine canals, and, after this union, progresses backward until the lateral halves of the uvula finally unite. This union takes place during the latter part of the tenth week, although union begins anteriorly as early as the eighth week. Any interference, to be effective on the hard palate, must be active before the latter part of the eighth week; of the soft during the ninth or tenth weeks.

As to the possible causes of these deformities, the first to be called to mind is heredity (whatever that may mean). Many of these cases give a history of previous cleft palates or hare-lips in the family, while others give no such history. A

number, however, in whose family histories we find no deformities of this kind, other deformities, such as those of the fingers, toes, spine, ears, larynx, etc., may be found. While these latter may also be found in association with hare-lip and cleft palate, Mason records as having found coincident deformities as follows: fistulous openings of buccal glands, an everted lower lip, and congenital fissure of lobe of right ear.

F. Warner cites cases of smallness of head and congenital defects of the heart associated. Binet reports a case of infantile genital organs associated.

Sir Morell McKenzie reported a case of congenital cleft between the arytenoid cartilages with trilobate epiglottis, occurring in conjunction with hare-lip and cleft palate (Figs. XIV and XV).

It is comparatively easy to point to some irregularity in the families of those suffering from this deformity, as disparity in the ages of the parents, but this does not explain, as we find the same history in thousands of families where no defect can be found. The same is true of the lack of, or if present only rudimentary, lateral incisor, for we find them in almost untold numbers.

Barry and Legg speak of the fact that this deformity is frequently found at the beginning or end of large families. What conclusions can be drawn from this citation in the case of the first child of a large family being so afflicted, I do not see. It would seem that if parents were presented with such a child they would be especially anxious to avoid a repetition, and therefore we would find only the one child. This is the case with two patients who have come under my care, one being under treatment at present.

As to their coming at the end, it might be contended that the strength of the mother was overtaxed by previous pregnancies, and that malnutrition was the

cause. There are a number of believers in this theory and their ground seems to be well taken, for the history of many mothers, during pregnancy, tells us of pernicious vomiting and of ill health, which



Fig. III.

Skull showing cleft palate. The smaller figure shows normal size of palatal arch. The larger, it will be noticed, is as much wider as the width of the cleft. From skull in Brophy's collection.

would seem to support it. The mother of one of my patients told me that during her pregnancy she did not have sufficient food.

It is quite easy, however, for some mothers to look back over the previous

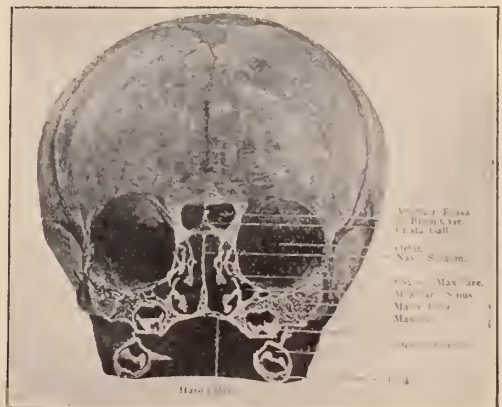


Fig. IV.

Section of head of child developed in normal way. (Cryer.)

nine months of their life and give you a number of facts, any one of which would seem to have a bearing. Others have one instance firmly fixed in their minds which



Fig. V.
Section of head of child born with cleft palate.
(Brophy.)

to them is all important and will usually declare the child was marked by a certain shock or fright. In tracing these it will generally be found that the shock took place during, or later than, the fifth month, when it would be impossible for it to have the slightest influence. Other cases, small in number, it must be admit-



Fig. VI.
Case of congenital cleft palate, in which the
palatal process failed to develop.

ted, the shock has taken place before the tenth week.

The average physician scoffs at the maternal impression idea, but unless he can disprove the claim as regards time, he should make careful note of the same.

Rose (Hare Lip and Cleft Palate) writes the following of a colleague:

"Mr. Carless tells me of a case recently seen by him of a cleft of the soft palate of a child, whose mother, without asking any leading questions, gave a history of a sharp attack of febrile disturbance keeping her in bed two or three weeks at a period when the foetus could not have been more than two months old. This is the type of maternal shock we should possibly look for, rather than the maternal impressions commonly suggested."

The fact that these deformities occur among animals, although with very much less frequency, does not necessarily militate against maternal impressions, but frequently favors the malnutrition theory.

I have endeavored to obtain records of cases in animals and in the savage tribes. Of the former a number of instances are recorded, as is also the case of the African negro, but I have been unable to obtain any records of such a deformity in the American Indian.

Several years ago my attention was called to some cases in animals by my teacher, Professor McMurich, who also mentioned the fact that if heredity played any part there would still be ample reason for the small number of cases on account of the impossibility of these unfortunates surviving encounters with their stronger brothers.

A number of years ago it was observed, in the zoological gardens of Dublin, London and New York, that lionesses which had been fed on animals whose bones were too large for them to crush, gave birth to cubs with cleft palates, while the cubs

born after their return to smaller animals as food were normal.



Fig. VII.
Single hare lip, left side; also cleft palate.

A very pretty theory is that of Cryer, which attributes to intra-uterine pressure the blame for the lack of union of the parts. You will remember that the mandible is developed at a much earlier period (fifth to sixth week). The position of the foetus with the head flexed, and usually with the vertex resting on the lower portion of the amniotic sac, has the mandible brought in contact with the sternum, which is also developed earlier than the maxilla, and between the maxilla and fronto-nasal processes, and thus by the pressure of the uterine walls in contraction upon the foetus, keeps the processes from uniting.

This would seem to be borne out by the fact that the parts are found fully developed at birth (see Fig. III), but have failed to unite. There are a few exceptions to the rule, one only having come under my notice in probably 200 cases seen in my own practice, and that of others through whose kindness I have been permitted to see a considerable number.

(Fig. VI.) Dr. Brophy tells me he has never seen such a marked case of lack of development.

However, this theory cannot be proven, for in order that such pressure may be exerted, we must either have an amniotic fluid or of low specific gravity, allowing the foetus to sink to the lower part of the sac, or small in amount, in order that the uterine walls may exert pressure. Granting that either may be true, there is every probability that a marked change will take place between the tenth week and the end of the ninth month.

The extent of the cleft, either in the lip or the palate, varies in wide limits. In the lip we may simply have a red line marking the union of the fronto-nasal with the maxillary process on one side, a single notch, almost imperceptible, to a cleft into the nostril on one or both sides. One side



Fig. VIII.
Single hare lip; palate normal. Case seen by courtesy of Dr. I. B. Perkins.

may be complete, the other form a slight notch to complete cleft through the lip



Fig. IX.
Single hare lip and cleft palate.

and into the nostril. A case under treatment at present had complete cleft upon the left side, while only a suspicion of a notch on the right. Another, also under treatment at present, had complete cleft through the lip on the left, while on the right cleft extended through lip except the last two millimeters which formed the lower border of the nostril. (Fig. XI). A younger brother of the last-named patient had a complete double hare-lip, but with cleft of palate consisting only of protrusion of the premaxilla, the palate, posterior to the anterior dental foramina, being normal.

The palate cleft may vary from a bifid uvula or slight groove of the alveolus, the latter causing displacement or hyperplasia of the lateral incisor tooth to complete cleft on both sides of the premaxilla through both hard and soft palate. Very infrequently we find a cleft of the hard palate without a cleft of the soft, but the reverse is frequently seen. One case of the former, a case of Dr. Brophy's, has

come to my notice. The cleft extended from the junction of the premaxilla with the maxilla to the posterior edge of the horizontal portion of the palate bone. All kinds and degrees may be found, even to cleft into the orbit and over the side of the head, but these latter are very rare, and it has been the fortune of but few to witness them.

The first thought of the parents of the afflicted child is, can anyone repair the damage which has been the result of interference with nature's plan, and when should steps to that end be taken? Is it advisable to operate early or wait a few months or years?

The older writers advised waiting until the child was from seven to twelve years of age, and until the early '90s this was the practice, although early operation was recommended at least as early as 1861, which the following extract from the Aus-



Fig. X.
Double hare lip; left side complete, right incomplete; slight protrusion of premaxilla. Complete cleft palate.

tralian Medical Record will prove, although the author's name is not mentioned:



Fig. XI.

Same as above with less protrusion of premaxilla. Fourth child; other three and fifth normal.

"I am not aware that the subject of using pressure in treating fissure of the palate has been before suggested. I am inclined to think that it has not; for when the plan first presented itself to my mind in 1851, I carefully examined French, German, English and American works to see whether it had. I was first led to try it on the dead body of a child, which had died three weeks after birth. The fissure was longitudinal, and large enough to admit the extremity of the little finger; fissure of the lip also existed. By means of a pair of clamps, the sides of the fissure were brought readily into contact, without any fracture or displacement of the bones; the fault was that the gums of the upper jaw were within those of the lower, but nature would modify this as the living child grew

up; the use of pressure on the lower jaw would remove a great deal of this deformity; of course, the amount of deformity would depend on the size of the fissure in the palate. I several times repeated this experiment on young dogs, removing a piece of the palate bone by means of Hey's saw, and then applying the pressure. The animals did well.

The operation should be performed as early as possible after birth, when the bones are in their softest condition. The following is the plan which I would suggest: The edges of the fissure having been pared, the superior maxillary bones should be embraced by a horseshoe shaped clamp, with a shelf on its lower border to receive the gums and prevent it slipping. It should be padded with india rubber, to prevent the germs of the teeth being injured. The clamp should work on a joint, and possess arms. It may be said to resemble a large pair of pincers, with horseshoe shaped blades. A screw may be attached at the extremities of the handles for the purpose of bringing the blades in contact, or the hands may be used; the former would be, I think, preferable, as the force could be applied gradually, and not be likely to be carried too far. It may also be employed in grown-up children, when the bones are



Fig. XII.

- Protrusion of premaxilla. Double hare lip without cleft between maxilla or in soft palate. Sixth child; brother of girl Fig. XIV.

so widely separated as to render it difficult to get soft parts enough to close the

From the foregoing it will be understood, I hope, that the younger the child the



Fig. XIII.
Single hare lip in girl 17 years. Palate normal.

opening, but in a gradual manner, and at intervals more or less prolonged according to the amount of pain it excites. If it



Fig. XIV.
Fistula 8 mm. deep. Seen by courtesy of Dr. D. A. Richardson.

were used suddenly it might produce inflammation, and subsequently abscess, which would prove troublesome to treat.



Fig. XV.
Case showing slight pit in cheek and two supernumerary auricles.

safer the operation is likely to prove, and that even in grown-up children it may be adopted, with precaution, with decided benefit.

The pads, and the ledge to rest the teeth may be directed on any part of the bones; the latter that the edges of the teeth may rest upon it, without the pressure being directed either too high or too low, but at the point where the palate bone joins the superior maxillary. I shall be happy to show any instrument maker the kind of instrument proposed."

Apparently this author never performed

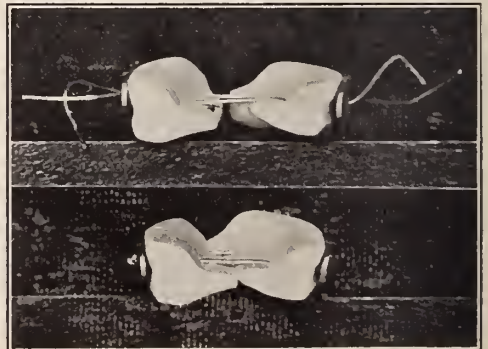


Fig. XVI.
Plaster models showing how jaws are forced together in early operation.

upon, should be made to slide in the sides of the clamp; the former that the pressure

the first few days after birth, due to their inability to nurse, has been amply proven.

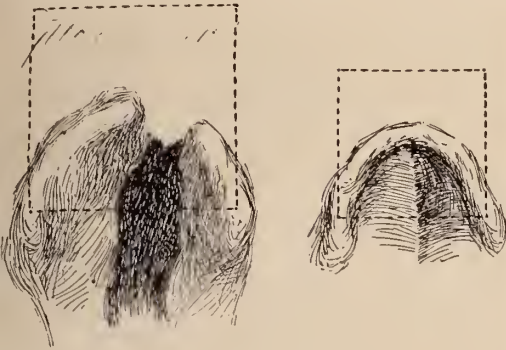


Fig. XVII.

After Brophy.

Fig. XVII. After Brophy.

Drawings from careful measurements of casts from life, showing relative positions of upper and lower jaws in the case of cleft palate in a young child. (The print is life size.) The dotted squares are made in exact proportion to the width of the respective alveolar processes at corresponding points. The large square is the width of the cleft greater than the smaller square. When the cleft is closed the squares will be of equal size, and consequently the teeth will occlude normally.

his proposed operation on a living child, and his work was entirely lost sight of until accidentally discovered by Garretson, after the latter had suggested a similar procedure. McLean, of Ann Arbor and Detroit, forced the parts together and held them with silver wire in 1884, and later, in 1891, Brophy did the same, and added lead plates to prevent cutting of silver sutures.

Since that time Lane has perfected the Davies Colley's operation for early infancy, of which we will speak later. A number of operations in which clamps similar to those recommended by the author above quoted have been exploited, chief among which are Roberts' and Ulrich's.

The reasons for the performance of this or any other operation early in life are:

First. The statement made by Tait that a large percentage of children born with extensive clefts of the palate die within

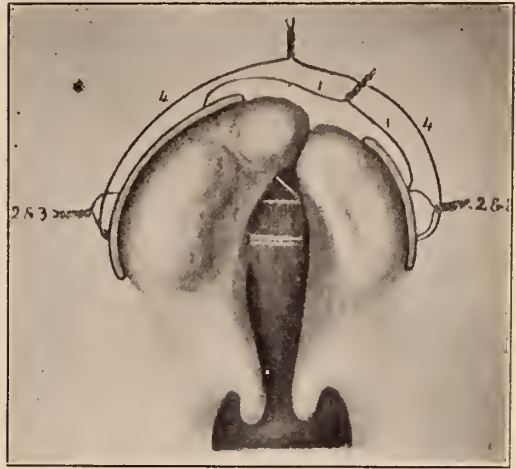


Fig. XVIII.

Early operation. Brophy's method. After Berry and Legg.

During the last few months I have received letters or telephone calls something to this effect: "Dr. So and So has a cleft palate case which he wishes you to operate if the child lives." I recall three cases of this kind which have never come to operation because the patient died.

Second. As mentioned above, the parts are fully developed, but have simply failed to unite. Why not assist nature by bringing them in apposition? (Fig. III).



Fig. XIX.

Showing appearance of palate after operation if vertical lateral section were made at posterior edge of hard palate.

Third. The child will learn to articulate with a palate that is normal or nearly so,



Fig. XX.

Lead plates viewed from oral surface.

and does not contract vicious habits which it will require years to overcome.

Fourth. These patients stand anaesthetics exceedingly well.

The time at which operation should be performed in these children: If the bones are forced together it must be while they are still pliable and before the deposits of inorganic salts has taken place to any great extent, which is before the end of the third month. Brophy operates as early as the tenth day. The youngest patient operated by the author was twenty days old.

The technique is as follows: The patient, having been anaesthetized, preferably upon the operating table, is placed in a semi-Trendelenberg position, thus avoiding aspiration of blood. The lip is raised, and with the special heavy, curved needle a heavy silk suture is carried through the lower part of the maxillary bone behind the malar process, so that the end will show above the palate process when it appears at the inner border. Care

should be exercised to avoid injury to the teeth by working the needle between them if possible. The silk is caught with the tenaculum hook, and the needle withdrawn. A needle with the curve in the opposite direction is used in the same manner from the opposite side, leaving silk with closed loops facing each other. The needle is then carried through in the same manner in front of the malar process from both sides, and on the longer side an extra loop farther forward. By looping one loop through the other, as first used by Mason, and withdrawing the surrounding loop, we have one double silk strand from one buccal surface to the other. These are replaced by drawing through, by means of this silk, a double silver wire. (Fig. XVI).

On these wires are threaded lead plates, and it is important that the holes should be the right distance apart so as not to cause buckling of the plates if at too great a distance, and so that the wires will not cut the tissue if too close together. Personally it seems that not enough care is taken in making holes in these plates, leaving portions of lead which, although soft, will irritate the tissues. For this purpose it is my practice to use the ordinary rubber dam punch of the dentist, which leaves a clean-cut hole with smooth surface upon side placed next to tissues.

The wires are then twisted together, one of the posterior with one of the anterior, care being taken that the same wires are twisted on each side. This will bring the parts together with comparative ease if

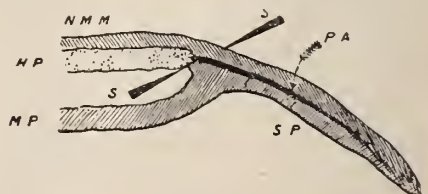


Fig. XXI.

After Owen, showing method of cutting muco-periosteum. N. M. M., nasal musous membrane; H. P., hard palate; S. S., scissors blades; P. A., palatal aponeurosis; M. P., muco-periosteum.

the patient is not too old, or the cleft is not too wide. If the patient is over three



Fig. XXII.

Right sided hare lip two weeks after operation. Note the over correction, also shape of nostril.

months of age, this operation should not be performed unless the cleft is very narrow. If the cleft is wide in the younger child, I have at times found it necessary to sever the malar process from the maxilla, as recommended by Brophy. This will allow easier approximation.

The palatal processes of the maxilla and horizontal portions of the palate approach each other so that they are almost in contact, the edges should be freshened, being careful to cut completely through the mucous membrane and periosteum; the wires should be tightened, thus bringing the parts in close contact and completely stopping hemorrhage.

If the premaxilla is protruding, it is best to force it backward into normal position at the same time, not by simply

drawing it back, thus causing a bending of the septum, which produces obstruction of one nasal passage, or, as is the habit of some operators, to simply make an incision in the septum subperiosteally and slip one part of the cartilage by the other, which will produce a thick septum partially or completely blocking one or both nasal passages.

My method, which is not original, is to remove a wedge-shaped piece, base downward from the septum anteriorly; the space from which this is removed being obliterated by forcing back premaxilla, and leaves a septum smooth upon both sides. It is necessary to freshen the edges of the premaxilla, and also the maxillae, in the same way as in the case of a single cleft.

It was formerly the practice of some surgeons to remove the premaxilla, and some authors, who apparently do not believe in early operation, point to the result of this procedure as due to early operation. However, as it is not an operation but a mutilation, it cannot be too strongly condemned.

In dealing with the lip we must first determine whether it is best to deal with



Fig. XXIII.

Left, two months after operation. Note shape of nostrils.

it before or after the palate; whether it will be best for the present welfare of the



Fig. XXIV.
Incorrect operation on lip. Note notch and flattened nostril.

child, or, if there is no necessity on this account, which will be better for ultimate result. For reasons given above it is better in the vast majority of cases to operate the palate first. If, in the opinion of the surgeon, the child will be able to nurse better with the lip closed than after closure of the palate, it will be better to operate the lip first. If a very wide cleft is present, or the case has reached an age when it would be manifestly impossible to force the maxillary processes together, then it is best to operate the lip, as by so doing we will be able to partially close cleft on account of pressure of lip and cheeks.

If possible it is much better to operate palate before lip, as the access to the parts is easier, and this is a great factor in any operation. Although it may be performed in case the lip is closed, that is not a valid reason for limiting the space. The light is always better, which is a distinct advantage, and relieves the surgeon of the ne-

cessity of using artificial light. It would be different if we had a normal lip closing this opening, as we have in all cases where the cleft in the palate is not accompanied by hare-lip.

However, if the lip has been closed, we have quite a little scar tissue, which interferes with its pliability, and this makes the operation more difficult.

There are, it must be admitted, objections to this procedure of early operation, but they are not valid when considered in connection with the benefits to be derived in the large majority of cases.

The opponents of early operation claim hemorrhage is a great danger, but if performed as above described one need have very little hemorrhage. Shock is a factor, but from my experience, I believe it is no greater than operation upon the lip, and is of shorter duration than a difficult lip operation.

These children should be observed for



Fig. XXV.
Same case after correction.

several days, or even weeks, before operating, and careful watch should be kept

that it has been so largely adopted, especially in England:

As all cases do not consult us early in life, some method or methods must be adopted to deal with older cases. There are many "original with me methods and systems," all of which are modifications and some improvements upon that originally performed by Roux and Warren, and later by Lagenback, Ferguson, Mason, Rose, Garretson and others, but no one of them suggests anything particularly new.

We owe much to a number of men of our present time and in the last decade, among whom are Brown, Owen, Chas. Mayo, Ferguson, Roberts, Lane, Brophy, Ulrich, and others, for their untiring efforts to improve the lot of these unfortunates.

Given a cleft through the soft palate extending into the hard palate to the junction of this structure with the premaxilla in a patient from 1 year to 50 years of age, we will first dissect the oral mucoperiosteum down from the bone backward to the posterior edge of the hard palate



Fig. XXVI.

Case shown in Fig. XIII after operation.

upon their food, digestion and weight. If a child is in good condition it will necessarily withstand operation much better than when not normal. Barry and Legg call attention to the fact that the mucous membrane is thinner in poorly nourished children, which is of great importance in operation, whether early or late.

The clamp operations of Roberts and Ulrich have no advantages over this, and have the distinct disadvantage of an instrument in a position where it is likely to be struck by the hands of the patient, or by eating utensils, besides being very much more likely to cause infection. I have had no experience with them, as they do not appeal to my surgical sense, and I understand that Ulrich has abandoned it for other methods.

The Davies-Colley operation is of value, but mainly in older cases. Lane's modification is of undoubted value from the fact



Fig. XXVII.

Left hare lip three weeks after operation. Infection in upper part caused sloughing and flattening of nostril.

and to the margin of the alveolar process, so that it hangs free, being attached only



Fig. XXVIII.

Double hare lip four weeks after operation.

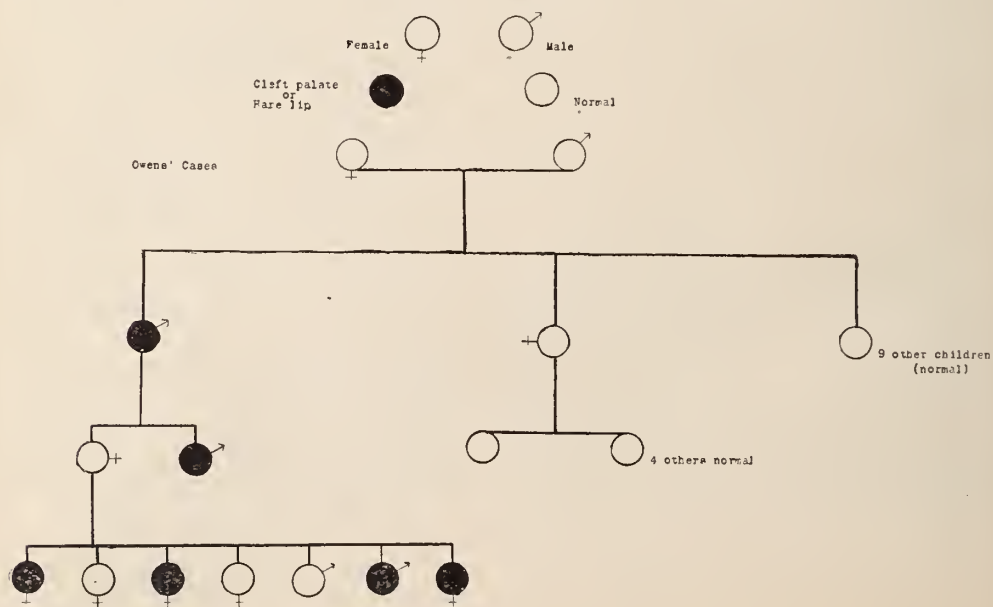
to the posterior edge of the horizontal plate of the palate bone, and to the alveolar border from the central incisors to the third molars. It remains for us then to free the soft palate, which is done by cut-

ting through the muco-periosteum on the nasal side of the posterior edge of the hard palate. This allows the flap to drop down. (Fig. XXI).

As the majority of cases that have not been previously operated show a marked tendency of the horizontal portion of both the maxilla and palate bones to assume an almost vertical position, it is easy to see how the flaps come in contact when allowed to drop down, and this, as a rule, without lateral incisions. (Figs. XIX and XX).

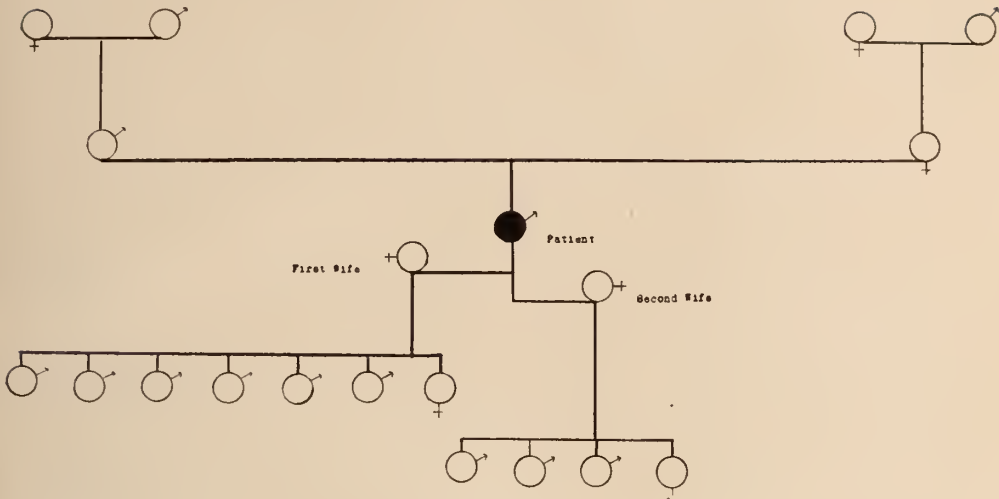
In cases where the slant is not so great, or where previous operation has caused loss of tissue, incisions may be necessary, but, if so, they should never extend back through the soft palate, but they may pass back and around the tuberosity of the maxilla. This, on account of the scar tissue which is formed when long incisions extend through the soft palate, will give us a rigid palate where we should have an exceedingly pliable one. In the soft tissue covering the hard palate this does not matter, but in the velum it may be a serious

Pedigrees of patients showing apparent hereditary tendencies in some families and at other times isolated cases.

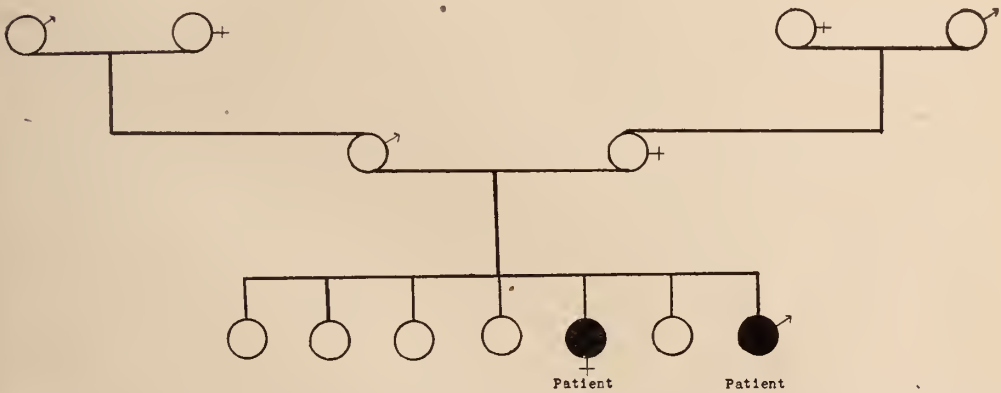


1st. case isolated. No history for two generations back, and not one in his descendants by two wives.

Author's Case.



Author's Second Tree.



obstacle to correct articulation, the correction of which is practically always the reason for the patient submitting to the operation.

Care must also be taken that incisions do not extend too far forward, as the knife may encounter the posterior or descending palatine artery as it passes forward and enters the foramen of Stenson to anastomose with the nasopalatine.

The incision, when carried backward around the tuberosity, may also sever this

artery as it emerges from the posterior palatine canal.

Tape, as used by Chas. Mayo, through incisions, a suture or gauze may be used to keep incisions open and give nasal drainage which otherwise will take place through line of suture, are all valuable.

The next step is paring the edges of the flaps, and consists in removing a very narrow strip of tissue in order to get rid of the epithelial surface. It may extend from the anterior end of the cleft to the uvula.

Where the soft palate is thick we may be able to obtain a fresh surface by splitting the edge, and thus secure a wider surface for coaptation without loss of tissue.

These steps being accomplished, and on their thorough performance depends our success, we next place our sutures, which are of two varieties. First, silver tension sutures placed about five to ten mil. from the edge. On these are placed lead plates or buttons, the former being preferable, as they act not only as quill sutures, but as splints to the soft palate, practically putting the muscles out of action. Coaptation sutures of silk, silkworm, gut horse-hair, or whatever may suit the operator's fancy. I prefer silkworm, gut or horse-hair, although I have used wires of all kinds, silks, etc. These may be interrupted as used by most surgeons, or continuous as recommended by Kirk. I have only used the continuous once, but with a very happy result, and expect to use it again;

its advantage being the rapidity with which it is introduced. The sutures should be passed completely through the flap except in case of splitting the palate and uvula; in the first only to the incision, and in the latter from the side.

When there is lack of tissue for flaps, I have resorted to flaps from the nasal mucosa, either from the inferior turbinate, the septum or floor, and have found that, although thinner than the oral muco-periosteum, it will answer very well.

Anaesthetic: chloroform preferably, or ether may be administered if atropin has previously been administered.

The after-treatment consists in cleaning the parts well with soda bicarbonate solution or boric acid solution, and touching ulcerating places with 20 per cent argyrol. Before leaving the table, the nose and mouth are syringed with boric solution to stop ozing; remove all clots and leave the parts as clean as possible.

EXCERPTS FROM RECENT LITERATURE

The Treatment of Fractures, a Critical Abstract.—The past decade has brought to our attention many new as well as modified methods in the treatment of fractures. One is actually surprised at the volume of literature that journals everywhere are devoting to the subject. Is it because of the Workman's Compensation act legislation in this country and which is the outgrowth of the unsatisfactory functional results produced by the older methods or is this renaissance activated by the general advancement which surgery has made in recent years? Be that as it may, the question still confronts us as to what is the best routine treatment in fractures.

The question does not limit itself as to how one can best restore the continuity of the bone involved, but also how to do

it with as little suffering and inconvenience to the patient as possible. The period of disability constitutes a great factor as well as an end result without stiffness, shortening and such other permanent effects which may even necessitate a change of our patient's occupation to one less remunerative or for which he is not especially adapted.

To accomplish the best results we are taught by Lane and Fritz Koenig to operate in every case of simple fracture, while Von Eiselsberg and the Viennese clinics advocate surgical intervention only in fractures of the patella. Here then are the two extremes for one to choose from.

We have read interesting reports from the findings of both the English and American committees appointed by their

respective surgical associations to formulate rules to govern the use of the open method treatment in simple fractures. Their respective conclusions are almost unanimous. They warn us primarily against the use of the open method where reduction can be made without incision, and sanction operation only when it can be performed by an experienced surgeon in a properly equipped operating room and with well trained assistants.

The wisdom of their conclusions can not be disputed.

The American committee has classified operators in three classes, to which we would like to add a fourth, namely "competent operators who have had experience in bone surgery." This point was greatly emphasized to the writer during a recent visit to a large surgical center in this country. He had the opportunity of watching a surgeon, who is truly a master in abdominal work, plate an ununited fracture of the femur. After several hours of hard labor the operator finally succeeded. The next day we observed the same operation performed by another man who had vast experience in bone surgery—he completed the operation in less than an hour. And what a difference! We venture to predict that this difference will be manifested in the final result of the two respective patients.

Special technique as well as ultra-asepsis are requisite for the success of these operations, not merely the ordinary skill and asepsis which are successfully carried on in other operative fields of the body.

If an open operation is decided upon what are the best mechanical means at our disposal to hold the fragments in place? In the opinion of some eminent surgeons, with which Lane disagrees, bone plating prolongs the period of healing, aside from numerous other drawbacks. The "external plates" and clamps, of which those of Lambotte, Parkhill and Freeman are

prominent examples, have proven useful, but they possess the objections inherent to the insertion of screws and the possible dangers of infecting the bone through open wounds.

We are all aware of the fact that animal tissues are intolerant of foreign bodies and our aim is to replace the metal plate or clamp with a non-irritating and physiologically acceptable substitute. To this end either sutures or the autoplasmic bone graft should be employed. All forces of absorbable pegs which the market affords are found unsatisfactory because they either break or bend before good union has occurred. In the repair of bone defects natural repair occurs rapidly when only part of the thickness of the bone is destroyed; this is substantiated experimentally by Graves, who also found that when fragments of bone are used they force new bone very slowly, especially if they are only loosely inserted in the gap, while large pieces when used as a graft unite quickly and force the center of new bone growth, providing they are tightly fixed to the raw surfaces of vascular bone. Based upon the same series of experiments Graves informs us that the periosteum is the produce and not the mother of bone. All the osteogenetic properties of the periosteum, whether in the repair of fractures or in grafting, are due to the more or less accidental presence of the outer layer of bone cells adherent to its deep surface. Living bone is the chief source and origin of callus which grows mainly from its center or periosteal surface and to a less extent from the medullary surface and its cut ends.

With our present knowledge of the pathology of bone repair we would not hesitate to recommend wiring of the fragments when they are widely displaced and when opposition without operation is found to be impossible—a method the writer has carried out successfully in cases

of spiral fractures with great separation of the fragments. In cases where the autoplasmic bone graft is used we would suggest the employment of the motor saw which obviates many technical difficulties. The graft being living tissue has certain germ-resisting properties. It immediately becomes adherent and fixed to the contacting tissues. It not only stimulates contiguous bone to increased osteogenesis, but it proliferates bone on its own initiative.

Notwithstanding the perfection which is constantly being made in the open operation, conservation in the treatment of fractures may best be carried out by following the dictum of Robert Jones who said, "Before we reach to new things we must ask ourselves if we have done the best by the old; and it is only by being critics of our own work that we can discover each for himself which procedure will, in his own hands, give the best results."

O. M. S.

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The Organism of Hodgkin's Disease.—Bunting and Yates (Arch. Int. Med. 1913, XII) in three cases of Hodgkin's disease have isolated pure culture of a pleomorphic diththeroid organism, which grows luxuriantly on glycerine phosphate agar under both anaërbic and aërobic condi-

tions, is gram positive, not acid fast and on dry medium the organism is long, granular, banded and club-shaped; on moist media is short and plump with polar staining. This organism is very similar to that described by Negri and Mieremet, also Fränkel and Much, in previous cultural attempts in Hodgkin's disease.

Animal experimentation is being carried on in order to work out Koek's laws.

A New Theory of Grave's Disease.—Marimon (Berl. Klin. Woch. 1913, I. 1296) has noted individuals along the coasts of Spain who present combinations of Myxedema and Grave's disease.

The theory now is that Basedow's or Grave's disease is due to an excessive thyroid secretion and Marimon attempts to show that the difference between Grave's and Myxedema is one of metabolized or unmetabolized iodine.

Myxedema, he claims is due to an insufficient metabolized iodine because of the thyroid gland being unable to metabolize the iodine brought to it, while Grave's disease is the result of excessive unmetabolized iodine.

Marimon has performed experiments on thyroidectomized dogs and has arrived at the above conclusions.

The Urea Content of the Spinal Fluid, With Special Reference to Its Diagnostic and Prognostic Significance.—W. B. Soper (Arch. Int. Med. Jan., 1914) has made a study of ninety-seven cases in regard to the urea content of the spinal fluid and comes to the following definite conclusions in regard to diagnostic and prognostic points.

1. A spinal fluid urea content higher than 0.2 per cent indicates a severe uraemia and rapidly fatal termination.

2. A content between 0.1 per cent and 0.2 per cent means a rapidly fatal ter-

mination in the majority of cases of nephritis.

3. A content between 0.05 per cent and 0.1 per cent does not permit of any definite conclusion as regards diagnosis or prognosis, but it is suggestive of severe urea retention.

4. As to diagnosis Soper believes the determination of the presence or absence of urea in the body fluids will go far to clear up certain difficult problems where the question of uraemia enters into consideration.

Fertilization Time and the Inception of Gestation in Women.—James Oliver, M. D., F. R. S. (Edin. Med. Jour., Jan., 1914) claims to have determined the fact that all fertilizations of human ova occur from an oncoming, rather than belonging to a past menstruation, and that gestation occurs at a definite time.

He believes that fertilization takes place at any time during the intermenstrual period except perhaps during the thirty-six or forty-eight hours preceding menstruation.

As a proof of this assertion he cites the fact that in all early diagnoses of uterine gestation, the size and consistency of the pregnant uterus is the same, and that it is absolutely impossible for any medical practitioner to diagnose the condition of uterine pregnancy until the fourteenth day after the date on which the first menstrual discharge, held in abeyance by the occurrence of pregnancy, should have made its appearance.

As a final conclusion he states that these conditions being so, gestation must begin at a definite and fixed time in the human female and this definite time corresponds with the preparation of a menstrual condition under ordinary circumstances.

News Notes

Dr. Woods Hutchinson is to deliver a lecture before the Woman's Club in April. While in Denver he is to be the guest of Dr. Arneill.

Dr. A. P. Busey, superintendent of the State Home for Mental Defectives, sustained a fracture of the clavicle while alighting from a train in Pueblo recently.

Dr. F. B. Rothrock of Colorado Springs has recently returned from a month spent in New York.

Dr. L. W. Bortree of Colorado Springs has recently spent a month in Chicago doing post-graduate work in the latest laboratory methods.

Dr. Beverly Tucker of Colorado Springs is accompanying a patient on a cruise of the Mediterranean and adjoining seaports.

Dr. D. A. Vanderhoof and family of Colorado Springs have recently returned from a several weeks trip on the Pacific coast, where they visited the doctor's parents in Los Angeles.

Dr. C. R. Hosmer, formerly of Colorado Springs, has opened an office in San Diego, Calif., for the exclusive practice of diseases of the eye.

Dr. P. H. Perkins of Colorado Springs died at St. Francis' hospital of pneumonia on January 17, 1914. Dr. Perkins was a graduate of Rush Medical School with the class of 1896, and had practiced in Colorado Springs since that time, having been local surgeon for the Colorado Midland railway for the past fourteen years. His mother, sister, wife and young son are left to mourn his early death.

The Colorado Springs Clinical Club held its regular monthly meeting at the El Paso Club on February 25th with the full membership numbering forty in attendance. A very interesting meeting was held, after which the seven o'clock dinner, which is a regular feature, was served.

Dr. B. B. Grover of Colorado Springs has just returned from a month's trip to Rochester, Minn., and Chicago, Ill.

Dr. H. P. Daniels of Colorado City spent the months of December and January in New Orleans doing post-graduate work in the New Orleans Polyclinic.

Dr. W. A. Campbell of Colorado Springs was called to Ohio in January by the death of his mother.

Dr. W. T. Gullion of Colorado Springs has gone on a trip to Vienna in the search of medical knowledge.

On Tuesday evening, March 3, Dr. E. Stuver gave a talk on Radium before the Brotherhood of the Presbyterian church. The audience was very much interested in the subject and a number of questions were asked as to the effects of this potent remedy on the human body. Particular attention was called to the widespread interest of the public at this time in this subject and the advantage that fakirs were taking of this to exploit their various schemes.

Dr. Fred Warlton of Manassa has gone to Salt Lake City to establish a practice.

Dr. Chas. Trueblood of Monte Vista was called to Andersonville, Ind., on account of the serious illness of his father.

Dr. Howell of Creede has gone to Denver to undergo an operation for appendicitis.

Dr. J. A. Biles of Creede has moved to Del Norte.

Constituent Societies

EL PASO COUNTY.

The regular meeting of the **El Paso County Medical Society** was held at the Antlers hotel on Dec. 10th, 1913, at 6:30 p. m., and was preceded by a special dinner given in honor of Prof. Adami.

Following the dinner Prof. Adami gave a very interesting talk on original investigations by American physicians, after which the regular business meeting was held. This was the annual meeting with the election of officers with the following results:

President, Dr. C. O. Giese.

Vice President—Dr. J. F. McConnell.

Secretary—Dr. G. B. Gilmore.

Treasurer—Dr. P. M. Lennox.

Delegates to the State Society—Dr. B. B. Grover; first alternate, Dr. L. W. Bortree; second alternate, Dr. F. L. Dennis.

Dr. Beverley Tucker; first alternate, Dr. P. O. Hanford; second alternate, Dr. P. A. Loomis.

Dr. D. P. Mayhew; first alternate, Dr. C. S. Morrison; second alternate, Dr. H. C. Watt.

There were thirty-two members present.

A letter was read from the president of the state society on good of the society, and placed on file.

The application of Dr. G. B. Chandler of Calhan.

There being no further business the society adjourned.

J. H. BROWN,
Secretary.

EL PASO COUNTY.

The regular meeting of the **El Paso County Medical Society** was held at the Antlers hotel on Jan. 14th, at 8:15 p. m., with President Giese in the chair. The minutes of the previous meeting were read and approved. There were thirty-five members present.

Dr. G. B. Chandler of Calhan was unanimously elected to membership in the society.

Dr. Timmons showed a patient and exhibited X-ray plates of the case. About three years ago while a dentist was working on the patient a gold band was lost in the patient's throat. This gold band was located in the right bronchus by means of the X-ray and was then removed by Dr. E. Fletcher Ingals of Chicago. Previous to its removal the patient had lost a great deal of flesh and had recurring attacks of lung abscess. Since its removal he has gained considerable weight and strength, but

there is still quite an amount of sputum.

Discussed by Drs. Webb, Mullin, Dennis and Giese.

Dr. Peters showed a case of a boy who had been presented to the society in November, 1913, with a diagnosis at that time of Lichen Planus. The boy is now nearly free of the eruption after two weeks' use of Lassar's paste.

Discussed by Drs. Moses and Boyd.

Program:

"Oedema," Dr. L. W. Bortree.

Discussed by Drs. Swan, Patterson, J. H. Brown, Morrison, Friedman, Webb, Gardiner, Boyd, Neeper, Moses and McConnell.

Dr. C. F. Gardiner reported a case of thrombosis of the kidney and showed the history chart.

Discussed by Drs. Swan, J. H. Brown, Webb and Mayhew.

Dr. J. H. Brown moved, seconded by Neeper, that the balance in the treasurer's hands December 31, 1913, be deposited in some bank to draw interest. Carried.

Dr. Magruder moved, seconded by Depeyre, that a committee of three be appointed to investigate the advisability of securing a permanent home for the Society and the removal of the Library to it. Carried.

Committee—Drs. Boyd, Dennis and Patterson.

The following committees for the year 1914 were announced by the president:

Program and Scientific Work—Drs. Giese, Peters and Boyd.

Social Entertainment—Drs. Mullin, Morrison and Loomis.

Public Health and Entertainment—Drs. Hanford, Gillett and Webb.

There being no further business before the Society, it adjourned to the dining room, where lunch was served.

G. B. GILMORE, Secretary.

LAS ANIMAS COUNTY.

A special meeting of the **Las Animas County Medical Society** was called for January 16, 1914, when the Society was entertained by the doctors in the militia.

The following members were present: Drs. Robinson, Thompson, Richie, Scannell, Jaffa, Presnall, Gage, Ford, McClure, J. G. Espey, Woods, J. R. Espey, Abrahams and Ogle.

After a delightful dinner had been served, President Scannell introduced Dr. H. E. Abrahams, who presented many plates illustrative of the practical use of the portable X-ray coil in traumatic injuries, with careful explanation of the several plates. Dr. J. R. Espey made an interesting address regarding the increased knowledge of the X-ray of today, compared with what was expected of it ten or twelve years ago. Dr. Lingensfelder addressed the assembly on the subject of camp sanitation and made replies to a number of questions.

The meeting was adjourned, and every individual carried home with him most pleasant memories of an evening with the militia at San Raphael Heights camp.

NORTHEAST COLORADO.

The annual meeting of the **Northeast Colorado Medical Society** was held in Sterling, Wednesday, February 4, 1914. The members present were Drs. W. B. Lutes, J. H. Daniels, J. C. Chipman, William Greig, M. R. Fox, M. L. Babcock, D. M. Cook, G. W. Barrett, N. E. Barney.

The following officers were elected for 1914:
President—Dr. M. R. Fox.

Vice President—Dr. W. B. Lutes.

Secretary-Treasurer—Dr. N. Eugenia Barney.

Delegate to the State Society—Dr. J. C. Chipman, Sterling.

First Alternate—Dr. D. M. Cook, Julesburg.

Second Alternate—Dr. J. H. Daniels, Iliff.

A paper on "Muscular Aesthenopia" was read by Dr. M. L. Babcock of Sterling. Discussion by members.

Dr. O. M. Gilbert of Boulder, president of our State Society, was present at our annual meeting and gave many helpful suggestions on promoting good fellowship among our members.

The afternoon meeting was followed by a banquet in honor of Doctor Gilbert.

N. EUGENIA BARNEY, Secretary.

WELD COUNTY.

The regular meeting of the **Weld County Medical Society** was held in the City Hall, Greeley, Thursday evening, February 5, with President G. R. Pogue in the chair and a good attendance of city members. After the dispatch of routine business the president called upon Dr. Ringle, who gave an extemporaneous address on the surgical anatomy and surgery of the tonsil. The Doctor was in good condition and did full justice to the subject in hand. He likewise presented to the Society the instruments he favored for the complete enucleation of the tonsil within its capsule; also a number of tonsils so removed. The address was well received and discussed by the members present. Following this Dr. Thompson led the discussion on the treatment of chronic gonorrhoea, commenting on the marked success he had experienced in this ailment by the use of bacterial vaccines. The meeting closed in good order.

February 19, 1914, Weld County Society convened in regular session at the usual place, with the president in the chair. The Banquet Committee reported that March 12 was considered a favorable date for the annual festivities, and that they expected to secure Dr. Hillkowitz and Dr. Spivak as platform attractions and exponents of the science and art of medicine.

Dr. Thompson reported that Dr. Law, one of the pioneers of the profession in Colorado, was on the sick list and would appreciate visits from the brethren.

Dr. R. F. Graham gave the scientific program for the evening, an address on the relation of the profession to the laity to each other, and to the quasi-medical cults which abound in all communities. The Doctor, who is an exponent of the dignity and erudition

which should surround all regular members of the profession, did not mince terms in dealing with irregular pathies. These immature and irresponsible parties should have no professional recognition at our hands. He was, however, surprised that occasionally when such treatment was accorded to them at the hands of the local profession, they sent to the capital of the state for physicians accustomed to sit in high places, and consultations were readily accorded to them.

The discussion was somewhat animated, and Drs. Ringle and Pogue took considerable pleasure in endorsing Dr. Graham's stand. The president was inclined to be somewhat lenient with a first offense, as the consultants might be unaware of the character of the attendant; a second offense, however, should not be so condoned, and that while he emulated Peter in many respects, he could be called upon to forgive too often.

The Society adjourned in good condition.

CHAS. B. DYDE, Secretary.

LAS ANIMAS COUNTY.

The regular monthly meeting of the **Las Animas County Medical Society** was held February 6, 1914, President E. J. Scannell in the chair. In the absence of Doctor Ogle, Doctor Richie acted as secretary. Members present: Doctors Beshoar, Harvey, Jolly, Lingenfelder, Richie, Presnall and Scannell.

An interesting paper was read by Dr. C. W. Presnall, entitled, "The Pathology of the Eye Relative to General Practice," which was discussed by Doctors Jolly, Lingenfelder and Beshoar.

Doctor McClure not being present to read his paper, the president called on Doctor Richie for remarks on the eye in regard to syphilis, which resulted in a general discussion on the treatment of syphilis. Doctor Lingenfelder called attention to the general impression among the laity that salvarsan is a specific. The Society adjourned, to meet March 6, 1914.

EL PASO COUNTY.

The regular meeting of the **El Paso County Medical Society** was held at 8:15 p. m., February 11, at the Antlers Hotel, with Dr. Giese presiding.

The minutes of the previous meeting were read and approved.

There were thirty-six members present, and one visitor.

The report of the Auditing Committee was read and accepted by a vote of the Society.

The Special Committee appointed at the last meeting to investigate the advisability of securing a permanent home for the Society and the removal of the Library to it made their report, which, briefly, was as follows: The Society could maintain a Library with a room for the meeting of the Society in one of the downtown office buildings, with the services of a librarian all day, for about one thousand dollars a year. If this amount is paid out of the funds of the society the annual dues would

have to be raised to \$16 a year. The committee submitted their report without recommendation. Drs. Boyd, Dennis and Patterson, committee.

It was moved and seconded that the report be accepted. Carried.

Dr. B. B. Grover presented the following proposed amendment to the by-laws:

"I propose that the words 'sixteen dollars' in Section 2 of Chapter 5, be substituted for the words 'eight dollars.'"

The application of Dr. A. L. Winston was read and laid over until the next meeting for action.

It was moved, seconded and carried that the matter of selecting periodicals for the coming year be referred to the Executive Committee with power to act.

Program:

Dr. L. H. McKinnie reported a case of a brain tumor in which the brain and tumor were discussed and demonstrated at the meeting. Discussed by Drs. Magruder, Stevens, McConnell, Mayhew, Friedman, Swan and Webb. Dr. Stevens showed several more specimens of brain tumors.

Dr. Schofield read a paper and reported a case of pityriasis rubra.

Dr. Goodson read a paper on "A Study of the Cases Admitted to the Modern Woodman Sanitarium," in which no tubercle bacilli were demonstrated. Very complete and interesting paper. The discussion was taken part in by the following: Doctors Forster, J. H. Brown, Webb, Rutledge and Giese.

City Health Officer Dr. O. R. Gillett announced that the city of Colorado Springs had purchased a lungmotor, which would be kept at the City Hall, to be sent out on calls with the police ambulance.

It was moved and seconded that a committee be appointed to draw resolutions of respect on the death of Dr. P. H. Perkins. Carried.

There being no further business, the Society adjourned to the dining room, where lunch was served.

G. B. GILMORE,
Secretary.

LAKE COUNTY.

The Lake County Medical Society met February 13, 1914, and elected the following officers:

President—Dr. A. J. McDonald.
Vice President—Dr. H. A. Calkins.
Secretary-Treasurer—Dr. E. A. Whitmore.
Delegate—Dr. B. F. Griffith.
Alternate—Dr. J. G. Schall.
E. A. WHITMORE, Secretary.

PUEBLO COUNTY.

The Pueblo County Medical Society met on February 17, President Singer presiding.

The minutes for January 20 and February 3 were read and approved.

At the suggestion of the committee on collections, Mr. Weber of the Commercial Reporting Co. reported a plan to be used by the physicians of this Society for keeping in touch with

the financial status of their patients. No action was taken by the Society.

Dr. Carl Maynard was elected to membership.

Under clinical cases, Dr. F. E. Wallace presented a boy with an anterior dislocation of the lens. The boy had been shot in the eye by an airgun.

Doctor Stoddard presented the paper of the evening. Subject, "Anterior and Posterior Displacements of the Uterus." There was a free discussion.

Dr. William Senger presented the study on pathology for the evening.

The Society ordered that an extension light be installed.

Society adjourned.

J. H. WOODBRIDGE, Secretary.

LARIMER COUNTY.

Larimer County Medical Society's regular annual banquet was held February 18, 1914, in the Y. M. C. A. building. It was decided by the committee this year to invite the doctors' wives to meet with us. A symposium of toasts on "The Hospital" was arranged for, and all the federated clubs of the city were asked to send a representative to the banquet and take part in the discussion of the topic of the evening. The Hospital Auxiliary was also represented and Dr. Chas. A. Lory was present to speak for the college. Dr. Rew introduced the toastmaster. In the absence of Dr. McHugh, who was attending the good roads meeting in Boulder, Dr. Stuver took his place and acted as toastmaster.

The following were present at the banquet: Dr. E. Stuver and wife, Dr. A. W. Rew and wife, Dr. Kickland and wife, Dr. Sadler and wife, Dr. Schofield and wife, Dr. Hubbard and wife, Dr. Quick and daughter, Miss Susie; Dr. Chas. A. Lory, Mrs. L. R. Rhodes, Mrs. C. McIntosh, Mrs. Delia Dickinson, Mrs. G. W. Bailey, Mrs. F. N. B. Scott, Mrs. C. H. Hinman, Mrs. P. J. McHugh, Dr. Curtis Atkinson, Dr. De Armond and wife and Mrs. W. E. Russell of Denver. The toastmaster, after congratulating the Society on inviting the ladies and thanking the visiting guests for their presence and interest in the meeting, responded to the "Hospital and the Public." He pointed out the importance of the work done in the hospital to all classes of society; the influence it has in stimulating physicians to do better work in every direction; its importance as agency for educating medical students and nurses, and finally, its influence in teaching the people the principles of hygienic living. In the absence of Dr. Geo. H. Glover, who was to respond for the city, he introduced Dr. Chas. A. Lory, who gave a very interesting and instructive talk, pointing out the advantages of the hospital to students attending the college and the feeling of safety and confidence that its presence created. Mrs. Rhodes was then called on, and gave a very good talk on the work done by the Auxiliary in assisting the needy poor that they might receive proper hospital attention. Mrs. Dickinson of the Co-

lumbian Club gave a felicitous talk on the "Hospital and the Women," and this was followed by an interesting one by Mrs. Hinman of the Woman's Club. Dr. Quick, who was one of the organizers of the Fort Collins Hospital and has been one of its faithful and active workers ever since then, spoke on the "Hospital and the Physician." He called attention to some measures to secure better hospital accommodations and facilities. In the absence of Dr. J. G. McFadden of Loveland, who was detained at home on account of illness in the family, Dr. De Armond was introduced, and spoke on "The Hospital and the Obstetrician." He called attention to the work done by Semmelweis in controlling puerperal infection. Short talks were then made by Drs. Kickland, Schofield, Taylor and Mrs. E. Stuver.

E. STUVER,
Secretary.

Adjourned.

MESA COUNTY.

The meeting of the Mesa County Medical Society, held at the Y. M. C. A. on the 19th of February, was by all odds the most instructive and enthusiastic meeting that we have had for many months. Two clinical cases by Dr. R. B. Porter of Fruita were discussed by the men present. The first case, greatly enlarged heart and aneurism; second case, carcinoma of the pyloric end of the stomach. This case was accompanied by pronounced jaundice, associated with almost complete absence of pain. Clinical case by Dr. R. B. Harrington, almost complete obstruction at the pyloric end of the stomach, due to scar of gastric ulcer. This case gave the usual history, signs and symptoms of such conditions. Posterior gastroenterostomy was performed, and the subsequent history of the case showed a cure. Patient was 32 years of age.

Dr. H. R. Bull was the chief speaker of the evening, reading a paper on "Ulcer of the Stomach," which was thorough and highly appreciated by all present.

Next came the discussion as to a banquet for the Society, and it was finally decided to have a spread at the earliest possible date with our genial friend, Dr. Carl W. Plumb presiding at the punch bowl.

A letter of thanks and acceptance was sent to Dr. W. Scott Cleland, secretary of the Delta County Medical Society of their kind invitation to attend a professional program and banquet to be held in Delta some time in April or May. Doctor Bull was delegated to read his paper on "Gastric Ulcer" on that occasion.

Members present were: Doctors Bull, Hanson, Plumb, Reed, Porter, Taylor, Needham, Henderson, Sickenberger and Harrington.

R. B. HARRINGTON, Secretary.

COLORADO OPHTHALMOLOGICAL SOCIETY.

The regular monthly meeting of the Society was held on February 21, 1914, in the offices of Doctor Black and Doctor Coover, Metropolitan building, Denver. Attendance, twenty-four.

Doctor Stilwill reported that the patient with

retrobulbar neuritis presented by Doctor Sedwick at the December meeting, and the sight of whose left eye had been lost, had since become suddenly blind in the right eye. Exenteration of the ethmoids had produced no improvement.

Doctor Orendorff presented a man of 37 years, who had been suffering from hyalitis and neuro-retinitis, for which no definite etiology had been found.

Doctor Spencer presented a woman of 66 years whose whole right cornea was markedly opaque as the result of recurrent keratitis with iritis, and whose left macular region showed a large area of choroiditis.

Doctor Schall presented a man of 33 years whose right eye had been struck by a piece of slag. The anterior lens capsule was ruptured and the lens opaque, yet the general appearance of the eye made it uncertain whether the eye had been penetrated.

Doctor Eigler (by invitation) presented a man whose eye had been injured by fragments of a spectacle lens which was struck by a piece of kindling wood.

Doctor Strickler presented a woman of 49 years whose history included persistent headache, marked increase of weight, increase in size of hands and feet, diminution of visual acuity and marked contraction of the visual fields; the question of possible tumor of the hypothesis being discussed.

Doctor McKeown presented a man whose eye had been struck by a piece of dirt, with resulting hypopyon and cataract.

Doctor Magruder reported that the patient with probable hypophysis tumor, presented at the last meeting, had died shortly after the beginning of ether anesthesia. Autopsy had shown a very large encapsulated spindle-cell sarcoma in the rear of the right occipital lobe. The brain was shown.

Doctor Black presented (a) a case of syphilitic irido-cyclitis, which had shown rapid improvement under salvarsan; (b) a case of birth injury of the left eye, with some signs of beginning irritation (at 22 years) in the right eye; (c) a case of painful inflamed eye, following repeated injury, with pterygium-like growth adherent to the cornea; and (d) a case of eye burn from bursting of a bottle containing bichloride of mercury.

Doctor Black reported, with sketch of case, a corneal tumor covering almost a half of the cornea, having the clinical appearance of papilloma, but which proved on microscopic examination to be a mixed-cell sarcoma.

Doctor Lehan presented gross specimens of eye showing retinal detachment, with cystic degeneration of the retina, in a boy of 16 years. There was an uncertain history of injury.

Doctor Matson reported regarding the case of dislocated lens, presented in November, that the eye had developed acute glaucoma, which had been promptly relieved by posterior sclerotomy, with marked gain in vision.

Doctor Libby reported that the case of albuminuric retinitis shown in November had greatly improved as regards vision, blood pres-

sure and general condition, under the use of four grains of choral hydrate b. i. d., together with sweating and catharsis.

WILLIAM H. CRISP, Secretary.

SAN LUIS VALLEY.

The San Luis Valley Medical Society met at Monte Vista, Wednesday evening, February 25. The members present were entertained at dinner by Dr. and Mrs. Pollock at their home. The scientific program was held in the office of Doctor Moninger.

Doctor Danlin gave a talk on "Bacterin Treatment." He has used the stock vaccines and Phylacogen, and they have given him satisfaction in the majority of cases, but thinks the Autogenous vaccines far superior. He thinks he has had good results with Pneumonia Phylacogen. Doctor McKibben of Creede, in discussing the subject was quite enthusiastic about Pneumonia Phylacogen. He has practiced at an elevation of 9,000 feet for many years and has always considered pneumonia there very fatal, but the vaccine has given him much assistance and lowered his death rate. He gives three doses the first day, and says it will bring the temperature down in twenty-four hours.

Doctor Pollock's paper was "Ectopic Pregnancy." He gave the history of six cases that he had operated. He dwelt at some length upon the cause of the condition and emphasized the chief points in diagnosis. Treatment is purely surgical.

The following officers were elected for the ensuing year:

President—Dr. John McFadzean, Del Norte.
Vice President—Dr. Moninger, Monte Vista.
Secretary-Treasurer—Dr. Herriman, Alamosa.

Delegates and alternates were not elected at this meeting.

Those present were Doctors Pollock, Moninger, Abbott, McFadzean, McKibben, Daulin, Richmond and Herriman.

BOULDER COUNTY.

The Boulder County Medical Society met at the Boulderado hotel, Thursday evening, February 26, 1914, at 7:30 p. m.

Dr. Ira D. Scott, an honorary member of the society, gave an illustrated lecture on "Oral Hygiene." He apologized for giving a lecture to the physicians which had been, in part, prepared for the laity.

Nurses from the Colorado Sanitarium were present as the guests of the society.

Doctor Scott showed the development of the teeth from very early childhood to adult life. Parents underestimate real value of primary teeth. These should be cared for just as much as the permanent ones. He illustrated the deformities which may take place as the teeth develop. Also abscess, decay, malocclusion, etc. He showed plaster models of normal primary and permanent teeth.

Dr. C. Gillaspie gave a review of some recent articles in the journals of anatomy. He spoke of some recent research work on the digestion of alligators. Also on the axillary arch mus-

cles. He called attention to aberrant pancreas cells. Some were found in the spleen. This accounts for tumors developing in the spleen, as a result of these foreign cells.

Temporo-maxillary articulation is opened by external pterygoid muscles and not by the muscles of mastication, which we formerly gave credit for this.

The meeting adjourned to meet the first Thursday in March.

F. R. SPENCER, Secretary.

TELLER COUNTY.

The Teller County Medical Society met in regular session on the evening of March 3, 1914, at the residence of Dr. Charles Howard, Victor.

The meeting was called to order by the president, Dr. W. W. King, with the following physicians in attendance: Doctors Howard, Jones, Schoen, Thomas, Dinsmore, Hayes, Brinton, Dunwoody and McIntyre.

The minutes of the previous meeting were read and approved.

The paper of the evening, "Anesthesia," was read by Doctor McIntyre.

The paper brought forth a discussion as to the safety of chloroform and ether at this altitude. It was agreed by all present that chloroform seems to act very much better at this altitude than does ether.

There being no further business to come before the Society, adjourned.

THOMAS A. MCINTYRE, Secretary.

LARIMER COUNTY.

Society met March 4, 1914, in the Y. M. C. A. building. There were present Drs. Kickland, Sadler, Winslow, Hoel, Taylor, Halley, Rew and Stuver. The minutes of the last regular meeting and the banquet were approved.

Doctor Kickland then took up the discussion of the subject of the evening, "Immunity." He first described natural and acquired immunity, then took up Ehrlich's side-chain theory and gave blackboard illustrations of how it worked; the different factors, the body cell, its receptors which are thrown off, becoming the antitoxins, the immune body, complement, toxins, etc., were graphically shown, and the part they played was lucidly described. The cytolytins, bacteriolysins and hemolysins were then discussed and anaphylaxis considered, and a resumé of Doctor Vaughan's recent paper on the infections was given. He also gave a clear description of the manner in which these principles are applied in making the Wassermann, Abderhalden and other tests. The discussion was clear, cogent and much appreciated by the Society.

Doctor Stuver discussed the paper, calling attention to the different methods of immunization and the clinical fact that high temperature may have a beneficial effect in reducing the virulence of the infecting germs.

"Radium" was the subject selected for our next meeting. The discussion will be opened by Doctor Winslow, and all members of the Society are invited to be present and take part in the discussion. E. STUVER, Secretary.

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Colorado Medicine

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Editorial Comment

IMPORTANT NOTICE.

Those members who have not paid their 1914 dues now stand suspended. This will be the last issue of Colorado Medicine they will receive, unless their dues are paid at once to the secretaries of their respective societies.

DO YOU WRITE?

Dr. C. D. Spivak is one of those rare benefactors who are fond of working for nothing—nothing as measured by the financial standard which is, too often, the only measure applied to one's work. Dr. Spivak's business is that of a gastro-enterologist, but with his work for the Jewish Consumptive Relief Sanatorium, which conscience and a strong sense of duty has thrust, and still holds, upon him, he has too little time for his own work and less, of course for the indulgence of his very great fondness for medical history. He has recently undertaken to make up a record of the writings of Colorado physicians, and has sent to Colorado Medicine an appeal for information upon this matter. Surely anyone who writes about medical subjects will take a great interest in Dr. Spivak's work and will lend a little help to make it more complete and less burdensome.

The editor had intended to scatter through Dr. Spivak's appeal a little stardust, with a purpose of making it as attractive as possible, but when he carefully read Dr. Spivak's paper it was found that he had himself gathered up and used all the sparkling nebula of the milky-way. There is nothing to add to it except the answers to his questions. Here they are:

The Literary Output of Colorado Medical Writers in 1913—Data Wanted.

Who is Who in medical literature in Colorado? What have the Colorado physicians contributed to medical literature during the year 1913? What subjects have been covered? Have all the branches of medical sciences worthy literary representatives? Do their writings represent the end-products of the laboratory, the clinic and the library? Do the surgeons write more than the internists? In what periodicals do they publish their labors? How do they compare in point of quality and quantity with states of equal or greater population?

The above, I admit, are not burning medical questions whose solution will revolutionize the present theory of immunity, or shake our faith in Abderhalden's test for pregnancy. Nevertheless, while others, my betters, are busily engaged in finding the cause of cancer and the cure

of tuberculosis, I am at liberty to let my fancy roam in spheres where my wings are likely to adapt themselves with greater ease. To me it seems that the labor of gathering data for a reply to the above stated queries is worth while.

Browsing in the pastures green of the Library of the Denver County Medical Society and guided by the gentle hand and encouraging smile of the fair shepherdess, Miss Malins, the efficient librarian, I have so far stumbled over the following names of Colorado medical writers in the 1913 field of medical literature:

Drs. Mary Elizabeth Bates (NYMJ), S. B. Childs (JAMA), W. H. Crisp (OR), Agnes Ditson (JAMA), Leonard Ely (JAMA), Leonard Freeman (JAMA), Arthur C. Friedman (JAMA), W. V. Page (JAMA), J. Gelien (JHMB), F. P. Gengenbach (JAMA), Ranulph Hudston (AMAB), J. N. Hall (MR Forehheimer's Practice), C. B. Ingraham (AJO), Edward Jackson (AJMS), S. Fosdick Jones (AJOS), Maurice Kahn (JAMA), Robert Levy (JAMA Laryngoscope), G. P. Lingenfelter (JCD), J. A. Mattock (JAMA), G. A. Moleen (AJMS), B. Oettinger (Med Rec, Inter MJ), Carl G. Parsons (ASDC), Howell T. Pershing (JAMA), C. A. Powers (JAMA Tr ASA), G. H. Stover (AIM), W. M. Spitzer (JAMA), E. Stuver (JAMA), Henry Sewall (JAMA, AJMS, Inter Clinics, Forchheimer's Practice), W. W. Williams (JID, AIM), H. G. Wetherill (JAMA), R. C. Whitman (JID).

I respectfully ask all writers who have published articles in 1913 and whose names are not included in the above list, to drop me a line, giving the title of the article, the name of the periodical, the date of its publication and the page.

Needless to say, that the authors would save me a great deal of labor if all who have reprints of their articles were to send me a copy, and whom for their courtesy

beforehand "will I praise seven times a day."
C. D. SPIVAK.

ABBREVIATIONS.

AIM. Archives of Internal Medicine.
AJMS. American Journal of Medical Sciences.
AJO. American Journal of Obstetrics.
AJOS. American Journal of Orthopedic Surgery.
AS. Annals of Surgery.
DC. Dental Cosmos.
JAMA. Journal of the American Medical Association.
JCD. Journal of Cutaneous Diseases.
JEM. Journal of Experimental Medicine.
JHB. Johns Hopkins Bulletin.
JID. Journal of Infectious Diseases.
IC. International Clinics.
L. Laryngoscope.
MR. Medical Record.
NYMJ. New York Medical Journal.
TASA. Transactions American Surgical Association.

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HOSPITALS.

Some of the functions of the state are too far removed from common interest to receive the attention they require. The care of the sick poor and of the derelict are among these.

It has been charged repeatedly in political campaigns that a large part of the money appropriated for feeding prisoners went into the sheriff's pocket. This charge, serious as it is, has never in any evident way affected election results. What concern can the people have in a prisoner's meals? If the walls of a prison are strong, so that those confined within it can not break through and again prey upon the community, our purpose in establishing it is fulfilled. Altruism does not extend, in any great measure, to those from whom we must be protected.

If the sick knock at our doors and solicit help, or lie upon the streets, or are known to be neglected in hovels, our sympathetic emotions are exercised. Hospitals are provided to care for those who might otherwise prove a nuisance as well as a shame to a community with generous pretensions.

Even physicians know little of hospital management. The growth of hospital uses promises to correct many existing abuses and supply much needed knowledge. Some of the papers read before the new and important section of the American Medical Association on Hospitals have expressed freely the belief that the American public hospitals are about as bad as an enlightened public could be expected to permit.

Any hospital may be fairly judged by the number of post-mortem examinations it furnishes. The treatment of the patient will be good or bad according to the interest which his physician takes in his case. It is inconceivable that a physician should maintain an intelligent interest in a case of illness and lose it when the patient is dead. The small number of post-mortem examinations made in American public hospitals has recently been the subject of comment by the Marine Hospital Service, and in these columns but a few months ago.

The Carnegie foundation has promised to make an investigation and a report upon hospitals similar to that made upon medical schools. The public official who feels that, with the subsidence of the political storms which have played havoc with his patronage, the hospital is still a place where the incompetent is secure, is threatened with an illuminating exposure. Something of this kind may excite public interest in hospitals.

A correspondent of the British Medical Journal has given an account of a public uprising in Rome caused by a proposed alteration in hospital arrangements. The officials having charge of the public hospitals of Rome had intended that certain antiquated and unsanitary institutions should be abandoned and that the patients in them should be transported to the new, modern and immense Polyclinico. The proposal met with a storm of

protests. Meetings were held on the streets and in public places. All business was suspended. The police were defied by agitators. There were several disastrous collisions between the authorities and those who protested against the new arrangements. The "Eternal City" seemed to be threatened with a new war when a satisfactory compromise restored the usual peace.

The demands which the citizens made upon the Roman officials may have been unwise, but the exhibition of their concern in hospital administration will not be without wholesome effect.

ADVERTISEMENTS.

The advertisements which a journal carries are not the least valuable of its contents. An advertisement tells of the new things that have come into use and of the old things that have continued in use. Unfortunately, the advertising business has degenerated into a saturnalia of misrepresentation. People have begun to disregard advertisements. Clubs have been formed for bringing about improvement in the reliability of the claims of advertisers. The merchant needs a means of appealing to his possible patrons. The purchaser needs a way of becoming truthfully informed about the market and sources of supply.

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Read over our advertisements; it's worth while. They are paid for by those who expect some profit in return for this expenditure. They should be mutually helpful to the reader and to the advertiser. The fact that a product or an in-

stitution is advertised in Colorado Medicine should, other things being equal, appeal for your support. This is your Journal. The advertisers help support it. As they grow in number the journal will grow proportionately in size and value. Write to these people for more detailed information about the things they promote. Tell them that you saw their announcements in a journal the character of which places them above suspicion.

Original Articles

THE HISTORY OF MEDICINE AND ITS RELATION TO CIVILIZATION.

BY WILLIAM H. CRISP, M.D., OPH.D.,
DENVER.

Maspero's fascinating work on the Dawn of Civilization gives an amusing account of the conception which the Ancient Egyptians had of the form of the universe. For them, of course, existence centered around the Nile, which they regarded as a fresh water sea. The universe was a large box, whose greatest diameter was from north to south, and its smallest from east to west. The earth with its continents and seas was the bottom of the box. It was a slightly concave floor, with Egypt in the center. The ceiling or sky was studded with lamps—the stars—which were suspended by strong cables, and were extinguished during the day. The ceiling was supported by four lofty mountain peaks, north, east, south and west. The world was bounded by chains of mountains which connected these four peaks. Every day the sun was carried in a boat upon a great river beyond the ramparts of the world. It was only visible in its passage along three sides, for on the fourth it disappeared in a deep gorge.

For us in the twentieth century this

description provokes a smile. Every schoolboy and schoolgirl knows that the earth is a great ball, instead of a slightly concave surface. I have chosen this old picture of the universe as illustrating the difference between ancient and modern thought. One of the simple proofs of the earth's roundness which are given to the schoolchild is, that the horizon tends to appear as a circle whenever it is not obstructed by buildings or irregularities in the earth's surface. The ancient Egyptian living on the plains of Egypt or sailing on the Mediterranean Sea had just as much opportunity to notice this fact as we have today. But his entire habit of thought and observation were different.

This primitive outlook on the universe was a part of primitive civilization. The history of medicine is a history of civilization in miniature. Man's medical belief and practice in those early centuries were just as crude as his topographic belief, his geographic belief and his religious belief; as crude as his knowledge of metals, of navigation, of chemistry and of physiology. Medicine is but an applied science, and its growth has followed the expansion of human thought.

Civilization is the process by which man, in his relation with the world around him, has differentiated himself from the animal. It has consisted of a gradual conquest of nature, of increasing complexity in his relations with the rest of his kind, and of a steady approach to that omniscience which we have associated with divinity. Our knowledge of those elaborately constructed human societies which we speak of as ancient civilizations dates back some three or four thousand years before Christ. Professor Keith, the English scientist, has estimated the minimum antiquity of mankind at one and a half million years. The beginnings of civilization therefore must

be vastly older than any of the monuments and writings which have been found in Egypt, Assyria or more recently in the Island of Crete. These beginnings preceded by huge intervals of time the use of any written language. And the beginnings of medicine, broadly considered, are as ancient as the first crude awakenings of civilization.

In a sense, medicine is as old as the existence of an intelligent animal creation. The tiny ant cares for its wounded clansman. Cats and dogs lick their wounds. Dogs eat grass for the same purpose as led some old-fashioned mothers to tickle with a feather the throat of a sick or poisoned child. Monkeys are said to apply their paw to check bleeding; and also to be quite skillful in extracting foreign bodies such as thorns. Primitive peoples make use of natural implements such as thorns, sharp flints and fish bones to open abscesses.

Our primeval ancestors knew nothing about germs. They explained most diseases on the basis of supernatural agencies. The patient was possessed of a devil which must be driven out; although the process of removing the evil spirit was often so severe as to imperil the life of the sick person. The savages of those early ages possessed very much the same childish outlook upon the world and its phenomena as we find in savage races today.

In Babylon some 5,000 or 6,000 years ago this demonistic conception of disease was colored by that mystic study of the stars which we call astrology. By the stars, epidemics and the results of disease in individual cases were foretold. That curious belief in the fateful power of numbers, and especially of compounds of seven, which we find so often in the Hebrew Bible absolutely forbade the Babylonish physician to touch the patient on the 7th, 14th, 19th, 21st or 28th

day of the month; that is, on any day the number of which was divisible by seven, or upon the 49th day from the commencement of the previous month. The physician was at that time also a priest.

The golden age of Egyptian medicine was about 2,000 years before Christ. The two most famous collections of medical lore which we possess from Egyptian civilization are the Ebers and Brugsch papyri. These were probably put together about 1,600 and 1,400 years before Christ, but were derived in part from works which dated back to 3,000 years before Christ, the age of the Pyramids. The study of botany and chemistry was relatively well developed. Neither in Egypt, nor in any other ancient civilization, however, was there any accurate knowledge of anatomy.

The medicine of Asiatic India was probably of equal antiquity. Two of the ancient sacred writings, the Rig Veda and the Atharva Veda, tell us a good deal on the subject.

Susruta, one of the most famous of the Indian physicians, enumerated 1,120 diseases, which were classified in three divisions—those due to injury, those caused by mental disorders and “natural ills.” Hygiene and diet were fully as important in the treatment of diseases as the use of drugs. Instructions are given as to daily washing of the person, cleansing of the teeth, the use of salves for the eyes and aromatic oil for the body, and care of the hair, beard and nails. Other matters regulated were meals and diet, exercise and rest, massage, clothing and gymnastics. Bleeding was popular. The great part played by drugs is suggested by the fact that Susruta knew 760 medicinal plants. But prayers and incantations were always to precede the use of drugs.

In this twentieth century we are not limited to our own country for the

sources of information. Thanks to printed books, to the public press and to the telegraph and submarine cable, we draw our inspiration from all the corners of the globe. If a new germ or a new cure for disease is discovered in far Japan, the people of Germany, of England, of Russia, of the United States, will read about it as they sip their tea or coffee with tomorrow's breakfast. In looking over the pages of one issue of a great world newspaper, I find messages from Berlin, from Switzerland, from Paris, from Toronto and Montreal, from London, St. Petersburg, Tokyo, the Balkans, Egypt, Mexico, New Zealand, Vienna, Persia, China, Belgium, Italy and the Antarctic regions. The Ancient Egyptian, or Hindoo, or Ninevite had no such facilities. All information had to be carried either by word of mouth, or on laborious and precious manuscript. Intercourse between distant lands was slow and relatively rare. So that the developments of culture and knowledge had much more strictly local character and boundaries than today.

Yet in spite of these limitations, every country and every time has owed something to other peoples and to other ages. We ourselves are the heirs of all time and all nations that have preceded us. As a single medical example, think of quinine, the drug which is specific for malaria, and which is known as Jesuits' bark from the fact that it was introduced into Europe by Jesuit missionaries who had got it from the natives of Peru. No doubt Ancient Egypt, and India, and Mesopotamia, and even remote China, all learned something from one another. Not only the religion and forms of government, but in even greater measure the medical lore of the Old Testament Jews gathered richly from the wisdom of Egypt and Babylon.

In every ancient civilization so far

mentioned, just as we may see today in uncivilized peoples, the cult of medicine was in large part a development of priestcraft. In the treatment of disease, the priest was merely the messenger of some deity, who would cure the faithful and blast the unbeliever.

It was impossible for medicine to develop as a real science, especially as a system of untrammelled observations and conclusions, because it was bound with the chains of religious superstition and hampered by the supernatural explanation of the functions of the body, their maladies and their cures.

The first record which we have of medicine escaping from theological leading-strings is in ancient Greece. In the early Homeric age, before the Greeks became the leaders of world thought, the healing art and the worship of the gods were closely interwoven. But as time went on, Greek commerce brought to the Greek cities not merely the spices, the raiment, the precious metals and the foodstuffs of other lands, but also their treasuries of thought and knowledge, their surgery, their botany, their systems of diagnosis and treatment of every malady under the sun. Just as the Greek philosopher began to put behind him his parochial beliefs in general thought and to take a wider view of the universe, so in medicine he gathered the best from every land with which he had dealings.

The greatest Greek physician of antiquity was the man who today is spoken of as the father of medicine—Hippocrates. A bulky mass of medical writings is attributed to him, known as the *Corpus Hippocraticum*. His exact share in the writing of this series of works was probably about as great as that of Homer in the *Iliad* and *Odyssey*, which is extremely problematical. Yet the two men probably both existed in the flesh, and in their turn either established or were the

outstanding figures of a group of poets and a school of medicine.

Hippocrates is reputed to have been born about 460 years before Christ on the island of Cos, one of those possessions of Turkey off the coast of Asia Minor which are to this day inhabited almost entirely by Greeks. The period of Hippocratic influence in medicine was the period of greatest development in Greek politics, science and art. Pericles ruled Athens from 449 B. C. The philosopher Socrates was born in 469 B. C. Among other great names of the same period are Sophocles, Euripides, Thucydides and Pheidias, writers of plays, historian and sculptor. The Hippocratic writings show traces of Egyptian and Babylonian medicine, as well as thoughts from the Greek philosophers. Some of their prescriptions are word for word the same as those in the Ebers papyrus of Egypt.

The Greek school of medicine at its best was a compound of a great deal of tradition with much that was the result of careful investigation and critical thought.

We find for instance a very accurate description of the valves of the heart. Cures by diet and exercise were favored, long walks being a common prescription. A writer named Alkmaion satisfied himself that the brain was the central organ of intellectual activity. The general belief was that the lower forms of life originated in decomposing matter; but Pythagoras taught that all life must come from an embryo. Anaxagoras did a lot of clever dissection of the brain.

The luminous feature of Hippocrates' teaching was that he desired to base all medical progress on knowledge by experience. General principles were to be reached by induction from the evidence of the senses. He declared that the symptoms of disease were the reaction of the body to diseased conditions, and that the

"natural powers were the healers of disease." He therefore supported the resisting power of the sick person, and interfered only as necessity seemed to arise.

It is remarkable that in many respects Greek scientific thought anticipated the great discoveries of modern times. Thus Democritus declared that the Milky Way was a cluster of stars. Some writers seem to have suggested the law of gravitation. Quite recently some modern speculators have tried to persuade us that the beginnings of life on this globe were shot through space from other worlds, shut up in fragments of the heavenly bodies; and it is interesting to find that a similar theory was put forward by Democritus in the Greek classic period. But it must be remembered that these ideas were purely in the nature of speculation. They were not supported by the testimony of facts carefully collected and compared. Democritus guessed, but Galileo with his telescope proved, that the Milky Way was composed of stars. Newton's statement of the laws of gravitation was no vague dream; it was a logical and unanswerable demonstration of the fact. The modern bacteriologist does not merely think that tiny organisms, invisible to the naked eye, produce disease; he shows them to us, separates them from all other forms of life, breeds them and with them can produce at will, on the lower animals, the disease of which he has declared them to be the cause.

To the spirit of free criticism and investigation which we associate with the Hippocratic school of medicine, we attribute the birth of modern science. Unfortunately, the actual accomplishments of Greek medical and other science were distorted and clogged by a tendency to excessive speculation. A certain amount of speculation, of constructive imagination, is necessary to every great scientific mind. But in the words of Hippoc-

erates himself, "Theory is the flower, not the root, of experience." You cannot theorize successfully unless you are a thorough student of facts. In poetry, fiction, painting, the richest imaginative work comes from those whose minds are abundantly stored with the facts of life. Perhaps the most astounding and sensational theorist of modern time is Darwin. But no man ever more laboriously accumulated detailed observations of scientific fact than did the author of the *Descent of Man* and the *Origin of Species*. Year after year the brilliant discoveries of modern science and modern medicine are placed before the world. They fire the imagination of the common man who reads of them in his daily newspaper; but he little realizes what sweat of the brain, what tedious repetition of experiment after experiment, has ushered in their birth.

Yet it may be that without the bold and rash speculations of the earlier ages the masterful and unquenchable curiosity for knowledge of the present day would never have been developed. The scientist of Ancient Greece did a great deal of dreaming, it is true. It is true, also, that his theories, all-embracing as they were, were often miserably wide of the mark, because they had so little foundation in the thing seen. But it is possible that if those dreamers had not dreamed, the modern scientific spirit could not have been born.

Their theories were often not lacking some appearance of reason. Thus there is a good deal of excuse for the theory that water, or air, or fire, is the prime form of matter. It is perfectly true that without moisture nothing can live, that air is necessary to most forms of life, and that a certain minimum temperature is equally indispensable for continued existence. It is more difficult to understand by what process of reasoning Em-

pedocles, for instance, satisfied himself that flesh and blood were each composed of equal parts of four elements—fire, air, water and earth; or how he determined that the bones were one-half fire, one-fourth earth and the other fourth water. Yet the deeds of this same Empedocles were better than his theories, for we are told that he freed the town of Selinus from a devastating scourge by reclaiming swampy land.

For five or six centuries after Hippocrates, medicine continued to produce brilliant writers, some of whom merely restated the beliefs of their predecessors, while others really added to the sum total of medical knowledge. Alexandria in Egypt, the new city founded by the Macedonian conqueror, was the center for much progress in mathematics, astronomy, physics and other branches. The study of anatomy was freely developed, but, unfortunately, many of the anatomists only studied the human frame in order to prove the truth of theories which they had already manufactured. Rome, which had no genuine culture of its own, imported one ready-made from Greece; and among the Greek teachers who settled in Italy were many physicians. This process was particularly active in the first century before Christ. A number of thinkers who were not physicians gave their earnest attention to medical thought. Among these was Varro, who considered the cause of malaria to be invisible organisms, which entered the body through the mouth and nose; and Celsus, who gave us our first description of an operation for cataract, and who says "the truly great physician does not conceal errors committed."

The most remarkable medical writer of Ancient Rome was Galen, who lived in the second century after Christ, under the Christian Emperor and moralist Marcus Aurelius. He gave popular lec-

tures on anatomy and physiology before audiences composed of the select Roman society of those days. His anatomical studies were made by dissection of animals; and Galen made the common mistake of first deciding what he wanted to prove, and then proceeding to make the facts fit his fancy. Only twice, and then by accident, did he get possession of a human skeleton. One was that of a corpse from the river, and the other belonged to an executed robber. But he proved by experiment that the heart was the cause of the pulsation felt on the surface of the body, knew that tuberculosis of the lungs was infectious, and found out the relation of the spinal nerves to the action of various parts of the body. He gives some sensible advice concerning the behaviour of the physician in the sick room. As an example to be avoided he recalls the story of one Cointos, who, being told by a distinguished patient that he smelt strongly of wine, retorted, "What then, thy fever smells worse!"

For a thousand years the medical works of Galen were revered as those of a master in the art; but, unhappily, his use of the experimental method was not continued or developed by those who blindly copied his methods of diagnosis and treatment. For a thousand years the human race was in many respects to go backward rather than forward; or at least to mark time. In the centuries following the death of the Emperor Marcus Aurelius, the Roman Empire fell sick, struggled for existence and died. In Europe, Asia and Africa the greatest empire the world had seen fell a prey to Almann and Frank, Hun and Vandal, Goth and Visigoth. When new nations had firmly established themselves on the ruins of the old, all vital human thought in Western European civilization was dominated by a new spiritual power. Alike on the ruins of old Rome and on the new

peoples which had plundered her was grafted the influence of Christian thought.

In the history of every civilization the world has seen, we find periods of intellectual vigor and periods of intellectual stagnation. India, the home of Buddhism and Brahmanism, has scarcely stirred, in a mental sense, since the beginning of the Christian era. Its wisdom was arrested and petrified because religion stood still, and knowledge and thought were bound to religion, hand and foot. Chinese medicine has produced nothing original since the tenth century when it was taught that matter was composed of five elements, in correspondence with five planets, five atmospheric conditions, five parts of the world, five seasons, five times of day, five colors and five tones. In the same way Christendom passed through the long, obscure period which we speak of as the Dark Ages. The writer of the gospel attributed to Matthew, speaking of Christ among the Gentiles, quotes the passage in Isaiah: "The people which walked in darkness have seen a great light." But the followers of Christ for many centuries, constructing their own interpretation of his messages, thrust the world back into the darkness from which it was trying to escape, and held it there.

Under early Christianity the demonology of the races of antiquity was revived. Since all good things came from God, evil manifestations such as disease must either be due to the machinations of the devil or be heavenly punishments for sin. If they were punishments, they must be atoned for by penitence and increase of religious devotion. If they were the works of Satan, then the devil must be cast out before the disease could be cured. Thus the church was likely to regard itself as the physician for all human ailments. This attitude was supported by a reverent study of the scrip-

tures. In the Old Testament the leprosy of Miriam and Uzziah, Job's boils, Jehoram's dysentery, Jeroboam's withered hand and the illness of which Asa died, were all explained as due either to the anger of Jehovah or the malice of Satan. In the New Testament Christ had raised Lazarus from the dead, cured the blind and lame and driven the devils out of a man into some hogs.

In the first few generations of Christianity the tendency to explain and treat disease on these principles was no doubt perfectly sincere, pious and free from self-seeking. But when the organized church became a splendid and wealthy corporation which must from time to time renew its funds from some source or other, more sordid motives got the upper hand. And the ability to control the physical as well as the spiritual well-being of the faithful was an immense source of power as well as of material riches. While cathedrals, churches, abbeys and other ecclesiastical institutions derived great revenues from the miraculous cure of disease it was not likely that the development of independent medical science would be greatly encouraged. However honest some of the church's officials may have been, there can be no doubt that there were many instances of gross and willful fraud. We have heard of St. Ursula and her eleven thousand virgins, who were said to have been martyred in warfare with the savage Huns. An old cemetery was robbed of its skeletons which, when arranged around the walls of a church and advertised as the bones of the virgins, performed many famous miracles. Unfortunately it was proved that some of the bones had belonged to old women, others to men and others again to little children. The faith of the believer continued unabated and the miracles went on.

"What profit has not that fable of

Christ brought us!" cynically exclaimed Pope Leo X., against whose wanton sale of indulgences Luther protested so effectively at the dawn of the German Reformation. The remark was worthy of him who, for a consideration, could issue tickets bearing the inscription: "This cross measured forty times makes the height of Christ in his humanity. He who kisses it is preserved for seven days from falling sickness, apoplexy and sudden death."

There were spasmodic outbursts of free human feeling and isolated efforts at investigation of the real facts of the universe, of the natural sciences and of the human body. But men were subdued by the hope and dread of kingdoms not of this earth. Any too independent thinker was excommunicated, thrown into a dungeon, tortured, burned at the stake, or, what perhaps was worse than all, compelled to give the lie to his conscience and recant the truths which he had revealed. Anatomical studies were forbidden on the ground that "the church abhors the shedding of blood." For over one thousand years surgery was considered dishonorable. Not to believe in the devil was to be an atheist; and physicians who discovered rational means of curing disease were accused of sorcery and atheism. Martin Luther firmly believed in the satanic origin of disease.

But, begun and completed at no definite point of time, there arose that great complex flood of change in human thought which we call by several names, in religion the Reformation; in philosophy and science the Revival of Learning; in art the Renaissance.

For centuries, all western Europe had been dominated by the idea of preserving one Holy Roman Empire and one Holy Catholic Church. But in place of the impossible universal empire there developed distinct, self-conscious nations;

and in religion, too, men began to think locally and for themselves. For a millennium men had studied the ancient Greek writings, as John Addington Symonds puts it, "in Latin translations made by Jews from Arabic commentaries on Greek texts." Now the works were studied at first hand or in translations, mostly Latin, made and expounded by scholars who found enthusiastic audiences in the universities.

Sixty years before Luther nailed his theses to the door of the church at Wittenberg, and about thirty-five years before Columbus landed on the island of San Salvador, the Bible was first printed from metal type by Gutenberg and Faust. Printing was introduced into England by Caxton in 1474. Within the latter half of the fifteenth century also the Papacy completed its development as a temporal power; warfare was revolutionized by the use of gunpowder, and Copernicus was beginning those studies which ended with his statement of the solar system.

The forces of reaction did not give up without a struggle. In the seventeenth century Francis Bacon referred to theologians as sometimes craftily conjecturing that, so long as science is little understood, "each single thing can be referred more easily to the hand of God"; and he adds, "This is nothing more or less than wishing to please God by a lie." Three and a half centuries earlier, Roger Bacon, a monk whose religious beliefs were entirely orthodox, had begun at Oxford, England, to do some wonderful experimental work. He is said to have given the world clocks and lenses, to have invented gunpowder, to have investigated the power of steam and to have almost reached some of the principal doctrines of modern chemistry. At the age of sixty-six years he was arrested "on account of certain suspicious novelties" (*propter quasdam novitates suspectas*) in his sci-

entific work, and thrown into prison for fourteen years. When released three years before his death he pathetically regretted that he had given himself "so much trouble for the love of science." His persecution may have postponed for two hundred years the discovery of many important truths, for he appears to have been a scientific genius born out of his due time.

Giordano Bruno, author of the nebular theory, was murdered by the Inquisition in 1600; and Galileo, who with his telescope had proved the motion of the earth around the sun, was compelled to recant and his books burned.

One thing the church did to advance medical knowledge. No medical school of the present day could carry on satisfactory teaching without association with good hospitals. Our present hospital institutions took their origin from the monastic infirmaries for the care of the poor and sick. In time special buildings were put up for this purpose, and special funds were contributed by the rich for their support. The earliest hospitals of which we have any record were established about the end of the fourth century, A. D., in Caesarea, Rome and Jerusalem.

What used to be known as the "five Royal hospitals of London" had a monastic origin, viz.: St. Bartholomew's, St. Thomas's, Bethlehem, Bridewell and Christ's hospitals.

The advance in practical medical knowledge after the revival of learning was not so rapid as in other lines of thought and effort. For years many of the ablest medical minds devoted themselves to making Latin translations of the Greek medical writings. There followed a great enthusiasm for the study of anatomy and for the investigation of the medical properties of botanical and other substances. Harvey's discovery of the circulation of the blood, published in

1628, explained many of the workings of the body in health and disease. College professors began to teach their students at the bedside, in the public hospitals, and much that could never before have been properly understood was learned by a study of diseased parts in the dead body. Many eccentric theories of disease were still offered to the profession and the public, not the least amusing of which was that of Hahnemann when he declared that seven-eighths of all chronic diseases were produced by itch driven inwards.

The most brilliant advances in medicine have occurred in the last forty years. In spite of the discovery of chloroform and ether anesthesia modern surgery could not have ventured as it has on the most difficult and intricate operations if the way had not been made secure by Lister's system of antisepsis and asepsis. The same fundamental discovery which made Lister's teaching possible has since shown us, one after the other, the living source of many important infectious diseases.

In the middle of the fourteenth century more than half the population of England and about twenty-five millions of the population of Europe are reported to have died of the so-called Black Death. In 1552, 67,000 people died in Paris alone from the Plague, and another 20,000 were destroyed in the same fashion in 1580. These scourges were in a large measure the result of want of hygienic precautions. The general population was hardly to be blamed for this when many holy men had glorified filth. We are informed that St. Anthony never washed his feet, and St. Sylvia absolutely refused to wash any part of her body except her fingers. To stop plagues at one time they murdered the Jews; and the Great Plague in London in 1665 was attributed to "prophaning of the Sabbath." The Scotch

clergy once asked Lord Palmerston that a fast day might be appointed to ward off cholera; but his lordship shrewdly told them to go home and clean their streets.

An ingenious writer has noted that many of the faces of women who two hundred years ago were reputed beautiful would today be counted plain; and he explains the fact by saying that in those days it was so rare to see a face that was not freely pitted with the traces of smallpox that a merely normal and healthy human complexion must by contrast have given great delight. And yet today sanitation and vaccination, with isolation of smallpox patients, have made the disease so rare that many a physician has never seen a case. We have banished yellow fever from Cuba and from the Southern States. We are fighting malaria and exterminating typhoid fever. The battle against tuberculosis is just beginning. We are daily told that modern medicine has made possible the building of the Panama Canal. Further advances will gradually open to the white man all those tropical regions that once spelt disease and death.

At the Renaissance human curiosity awoke again after a long slumber. Human curiosity, and the rejection of authority, produced Columbus, and Luther, and Galileo, and modern biblical criticism; and these two influences are responsible for much that underlies modern spiritual and economic unrest. Human curiosity has given us complicated machinery, the railroad, the telegraph, the telephone, the talking machine, the trolley car and modern medicine. Human curiosity, systematized and glorified, is the modern scientific spirit. Medicine is but the servant of civilization, and experimental science has still many miracles to perform for both.

Truth has been sacrificed to wealth, to

position, to religious dogma and bigotry; but with its victory comes real wealth, the leadership that is service and the religion that sees the best worship of a mysterious God in tolerance and help for the mankind that is always with us. Of the search for truth the modern scientific spirit is a noble part. Of the modern scientific spirit modern medicine is and will continue to be one of the richest fruits.

318 Majestic Building.

SOME RECENT CASES OF GLANDULAR FEVER.

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In 1896 I reported three cases of the so-called glandular fever, which had first been described in 1889 by Pfeiffer under the name of Druesenfieber. In the course of the next two or three years a number of articles appeared on the subject, notably one by J. P. West, reporting an epidemic of, if I remember correctly, some fifty or more cases. Since then I have seen but little about the disease in the literature, and for some ten years no further case came under my personal observation. As to the textbooks, some authors apparently doubt the existence of glandular fever as a distinct affection, since they fail to mention it. By others (as Koplik, Taylor and Wells) it is very briefly and, on the whole, inadequately described. It would seem, therefore, desirable to again call attention to the prominent features of this disease, as well as to give a brief description of some recent cases which have all the earmarks of genuine glandular fever. It can scarcely be a mere coincidence that after so long an interval several cases which admit of no other diagnosis should suddenly appear in the practice of a single individual:

CASE I.

Resume: Moderate fever for 5-7 days,

with bilateral adenitis and a very slight sore throat.

Baby B., aged 20 months, was seen first on Sunday, June 9, 1907. She had been feverish for two days, but appeared to be generally as well as usual, except for a poor appetite. The afternoon temperature was 102.6° , the throat, ears and other organs negative.

June 10, temperature 102.7° .

June 11, temperature 102° . The glands were considerably swollen under both ears and below. Tonsils very slightly reddened and swollen, with one tiny white spot on one of them.

June 12, temperature 102.5° .

June 13, temperature 102.5° . The glands were slightly larger, discrete and tender. The throat is now normal.

June 14, temperature 102° . Otherwise there was no change, the general condition remaining excellent.

June 15, temperature normal and the glands are, perhaps, slightly smaller.

There was no further fever in this case, the glands returning gradually to their normal size.

CASE II.

Resume: Steady fever for 8 days, with only swelling of the cervical glands to account for it.

Baby P., aged 3 years, was first seen on January 5, 1908. There was a history of some fever, off and on, for about three weeks, but 6 days ago, when the fever had been absent for some time, the glands on both sides of the neck became swollen and the temperature has been from 101° to 102° every day since, yesterday reaching 102.6° . On physical examination, I found the temperature 101° , throat, lungs, heart and spleen normal, but a very marked enlargement of the posterior cervical glands on both sides, and of the sub-maxillary on the right. On the following day the temperature was again 102° , but on the next day it was only 99.8° , and after that it was

normal, with gradual subsidence of the glandular swelling.

CASE III.

Resume: 5 days continua with enlarged glands.

Stephen L., aged 8, was seen but once, on the 11th of March, 1910. A history was given of very mild scarlet fever 3 weeks before, but normal temperature for one week until 4 days ago, when there was a rise of temperature to 103.5° . Since then there had been a continuous fever up to this afternoon, when it is 103.5° . I find a very slight redness of the fauces and a moderate bilateral enlargement of the posterior cervical glands. The general condition is excellent.

The subsequent course of this case is unknown, and the diagnosis, therefore, doubtful.

CASE IV.

Resume: Protracted and continuous fever for about 3 weeks with no clinical lesion other than glandular swelling.

Rudolph R., aged 5, was first seen on December 24, 1910. Yesterday he had a slight fever for the first time, with soreness of the throat, and this morning his temperature was over 102° . On examination I found a temperature of 102.5° (p. m.), some swelling of the tonsils and marked enlargement of the glands near the angle of the jaw on both sides. The general condition was fine, and he was not very ill.

My next visit to this patient was on January 6, two weeks later. The mother, who was a highly intelligent woman, reported a nearly continuous fever since my first visit, generally up to 102° and only once as low as 99° , without any appreciable disturbance of the general condition. The glands were still enlarged, especially on the right below the ear, where one is very large, hard and slightly painful. The examination was otherwise negative except a slight soufflé at the apex of the heart.

The family lived at a long distance, and

my next visit was on the 11th, five days later. The temperature had been 104° on the 9th, 102° on the 10th, and today is 103.6° . There is some diminution in the size of the glands on the right, but a corresponding increase of the same glands on the left. Other organs, including the spleen, are negative. The boy is lively and makes but little complaint.

I did not see this patient again during this illness. The mother informed me that shortly after my last visit the fever ceased and that this was followed by gradual subsidence of the glandular swelling and return to perfect health.

CASE V.

Resume: Continuous fever of 9 days' duration, with bilateral glandular enlargement.

I was called to see Thomas R., aged about 3 years, on June 6, 1911. There had been fever two days before, none yesterday, but recurrence today. The history suggested nothing definite, and examination showed a temperature of 102° with otherwise normal findings.

June 7, temperature 103.4° . Had three offensive stools. With the exception of a slight roughness of the first sound at the apex, and a beginning enlargement of the posterior cervical glands, the physical examination is negative.

June 8, case not seen; highest temperature reported as 101° .

June 9, glands on both sides of the neck about the size of an English walnut. Heart, lungs and throat negative. Temperature 103.4° .

June 10, temperature 102° .

June 11, temperature over 102° . Glands are slightly increased in size, hard, and all situated posterior to the sterno-cleido-mastoid muscle.

I did not see this case again, since the temperature fell gradually to normal during the next three days, and this was rap-

idly followed by complete recovery, with disappearance of all glandular swellings.

CASE VI.

Resume: Fever of 4 weeks' duration, with unilateral adenitis.

Frank M., aged 6, was first seen November 5, 1912. Fever began to-day, with complaint of some soreness of the throat. I found it, however, negative on examination, and with the exception of a temperature of 103° , nothing was discovered.

November 6, case not seen, but fever persisted and the glands under the right jaw became swollen.

November 7, lies with neck apparently very stiff and painful, but the glandular swelling is very moderate. The throat and other organs are negative. Temperature 101° .

November 8, temperature 101° but the general improvement is so great that it will not be necessary to see the case again.

I do not consider this a clear case of glandular fever; and yet the only other possible hypothesis, namely, a concealed throat infection with secondary glandular involvement, is not satisfactory.

CASE VII.

Resume: Continuous fever of 1 month's duration, with moderate glandular enlargement.

Baby P., aged 3, was first seen on the 4th of November, 1912. A history of continuous fever for the past 4 days was given, but there were no other symptoms than those which usually accompany fever. On examination I found nothing to account for the fever except moderate enlargement of the posterior cervical glands. The throat, particularly, appeared to be negative, and the general condition was excellent.

I saw this child but rarely during the following three weeks of continuous glandular enlargement and fever. It was impossible for the parents to keep him in bed,

and several times I found him playing about the room with a temperature of 104° . At the end of the above period both the fever and the adenitis subsided and in a few days recovery was complete.

I have seen this child many times since the above illness and know that there was no residual adenopathy. I need hardly say that a thorough examination was made at each of my visits and that no complication or other explanation of the fever was ever discovered. This seems to have been a typical case of glandular fever except that it was much longer than usual.

CASE VIII.

Resume: Continuous fever, with symmetrical glandular enlargement for 5 or more days, following tonsilitis and otitis media.

Lee A., 4 years of age, was first seen on January 19, 1913. I was called because of fever, and a history was given of tonsilitis 10 days before, followed by otitis media, which ended in recovery in 4 or 5 days without incision. I found that there were still some small follicular patches on the tonsils, which might be either fresh or a residuum from the former attack, and a symmetrical enlargement of both the anterior and posterior cervical glands which were hard and not especially tender. The temperature was 103° and the examination otherwise negative.

For four days the temperature continued from 102° to 103° , the glands remaining unchanged, whereas the throat quickly resumed its normal appearance. The general condition was excellent throughout, so that I usually found the boy sitting up in bed. Nothing else worthy of notice developed, and on the 5th day the temperature was so much lower that I made no further visits. Convalescence was uninterrupted.

In view of the frequent presence in glandular fever of a slight infection of the tonsils, as in the very typical Case IX., it

may be questioned whether this might not have been a case of glandular fever from the start, with complicating otitis media.

CASE IX.

Resume: Continuous fever for 10 days, with bilateral glandular enlargement and complicating nephritis.

Wilbur J., aged 6, had had a fever for 4 or 5 days when I first saw her on May 26, 1913. She had complained that her neck hurt and that her throat was sore. I found a temperature of 104° with marked enlargement of the glands at the angle of both jaws, especially on the left, and also of the cervical glands on the same side. The throat was possibly slightly reddened but in the main negative, as were also the ears, chest and other organs.

May 27, temperature 103.5° .

May 28, temperature doubtful, since the child was not seen.

May 29, temperature 102.6° , with glands unchanged and general condition excellent.

May 30, temperature 102.4° .

May 31, the glands were slightly larger, and many small kernels were found posterior to the sternocleidomastoid. She vomited today for the first time.

June 1, highest temperature was 100.6° . The urine was of dark red color and contained microscopically much blood and about 20 or 30 leucocytes to the field. There was no edema, and the quantity of urine seemed fairly normal. Since the glands seemed slightly diminished in size, and since there were no casts and the quantity of albumin was not excessive, I suspected a genito-urinary infection.

June 2, casts appeared in great abundance, and the quantity of urine was reduced to 8 ounces in 24 hours. It was now evident that there was a complicating nephritis; but this pursued a very mild course without edema or any threatening symptoms. The temperature on the 4th was again up to 101.6° , but fever continued for only two days. On the 11th the urine was

clear and but very slightly albuminous, and the glandular swelling had practically disappeared. Convalescence was rapid and eventually complete.

CASE X.

Resume: Symmetrical glandular enlargement of 10 days' duration with constant moderate fever, and splenic enlargement.

Philetus H., aged 5, to whom I was called on June 18, 1913, had had a slight fever of one or two days' duration about 10 days before; there had been some catarrhal symptoms which at first seemed to threaten measles but which rapidly disappeared. On the night preceeding my visit fever had returned without apparent cause and with no complaint except a stuffed nose. The physical examination showed a temperature of 101° , the throat very slightly reddened, and a marked enlargement of the sub-maxillary and anterior cervical glands on both sides of the neck. No other changes were discovered except a very considerable enlargement of the spleen which there was nothing in his past history to explain. His general condition, as is usual in glandular fever, was most excellent.

During the next 4 days the fever continued at 101° to 102° and there was nothing worthy of note until the 22nd, when I found the tonsils pretty well covered with a thin, smeary, membranous deposit in irregular patches. This led to a culture, which proved negative. This tonsillar deposit continued for two or three days, during which the temperature averaged a little over 102° in the afternoon and a degree less in the morning. Meanwhile the enlargement of the glands, certainly the most prominent symptom beside the fever, had remained unchanged.

June 23, temperature 101.8° .

June 24, temperature 101.4° . The spleen is no longer palpable, the throat is almost clear, and the glands appear slightly di-

minished in size although many kernels are still to be found as low as the clavicle.

During the following three days the temperature fell gradually to normal. On the 30th he was free from fever, the glands were scarcely palpable and permission was given to be up and about.

But little comment on these cases would seem to be necessary. While two or three might, perhaps, be interpreted as simple cases of adenitis complicating other conditions, the others are not thus explicable, and, to my mind, represent a distinct clinical entity. Aside from tubercular adenitis, which the course pursued by these cases would certainly eliminate, and the glandular enlargement associated with leukæmia, Hodgkin's, etc., children rarely present other than one of the three following conditions:

(1) A simple, acute adenitis, accompanied by fever if severe, and tending to suppuration. It is usually limited to a single gland or conglomeration of glands, and is almost never bilateral or symmetrically distributed on both sides of the neck.

(2) The glandular infections, tending often to plegmonous processes, which attend some of the acute infectious diseases.

(3) Isolated, or possibly bilateral and symmetrical enlargements of the cervical glands, such as appear, for example, with pediculi capitis, or follow upon throat infections. They represent very slight degrees of glandular irritation, and may persist for many weeks without the production of fever and without showing any tendency to suppuration.

It is quite evident that most of the cases described belong in neither of these categories. While the duration of glandular fever may apparently vary from four to five days to a month, yet the usual course might be stated to be from seven to ten days. Although the etiology is, in general, obscure, an association with some affection of the fauces is certainly not infrequent.

Nevertheless, the throat is usually wholly negative on inspection; and it is to be especially noted that neither the glandular or the general manifestations move *pari passu* with those of the throat; the latter may wholly subside at the height of the glandular affection (Case IX.).

While it would appear that exceptionally the adenitis may be unilateral (Case V.), this must be regarded as extremely unusual, and a bilateral, almost symmetrical enlargement must be considered one of the important diagnostic features of the disease. Again, it would appear that the sub-maxillary glands are never exclusively involved, and often not at all; the characteristic swellings are found in close proximity to the sternocleidomastoid muscles. Usually these glands are but moderately enlarged—perhaps on the average to the size of a walnut. Several are usually to be found on each side, although it is claimed by some authors that the glands on the left are as a rule first enlarged, to be followed in two or three days by a corresponding swelling of those on the right. The glands nearest the ear are usually the most prominent, with rarely more than a few small kernels in the region of the clavicle or the lower half of the neck. The glands are generally not noticeably painful, or tender on pressure. Particularly to be emphasized is the total lack of all tendency to suppuration, or to anything which approximates to a phlegmon of the skin or surrounding tissues. On the contrary, the glands tend always to remain discrete; and we have, therefore, as the characteristic picture of glandular fever a rather symmetrical adenitis of the anterior and posterior cervical glands which rapidly reaches its acme, remains unchanged for a few days and then subsides as quickly as it came.

With these local developments the general disturbance keeps pace. A temperature of 102° to 103°, with morning remissions, is the rule. Other toxic symptoms, how-

ever, would appear to be rare. Children thus affected are but slightly prostrated, and in none that I have seen was there any tendency to cerebral symptoms, to circulatory disturbances, or to the typhoidal state. A general euphoria seemed, on the whole, a rather pronounced feature.

That serious complications may attend glandular fever has been observed by others, and was confirmed by the nephritis noted in Case VIII. of my series. This would appear to have been of the variety which has been recently termed "vascular," corresponding probably to what is also termed glomerular nephritis, in distinction from the severer forms affecting the parenchyma or tubules. These cases are characterized by the prominence of blood in the urinary sediment, instead of numerous casts and large quantities of albumin; and since there is no defect in the excretion of sodium chloride, edema is uncommon. Whether other observers of glandular fever have found this particular form of nephritis I do not know.

It will be noted that enlargement of the spleen was observed in one case, and the same has been found by others in a small proportion of cases. It does not appear to be sufficiently constant to help much in the recognition of the disease.

The diagnosis of glandular fever certainly presents but few difficulties to one who is cognizant of its existence as a clinical entity. Probably most cases are thrown upon the scrap heap of peculiar or unknown infections; or are regarded as variations of simple adenitis; or, what is far more serious, arouse great apprehension as to the possibility of tuberculosis. In order to avoid repetition, it seems sufficient to again insist that any primary, acute, febrile, bilateral swelling of the cervical glands is a very uncommon occurrence, and ought always to suggest that uncommon disease, glandular fever. Of course, the subsequent development of suppuration,

chronicity, etc., would naturally arouse a suspicion of tuberculosis, Hodgkins, or some other infection; but such an outcome must be exceedingly rare when the onset is markedly acute, and the adenopathy symmetrical.

The prognosis would appear to be almost always good, and the treatment wholly symptomatic, unless one may hope to shorten the duration by vigorous treatment of the throat. The temptation to do this is not great, considering the early age of most patients and the usually mild and self-limited course of the disease.

J ARRESTED DEVELOPMENT OF CANCER.*

G. A. BOYD, M. D.
COLORADO SPRINGS.

The case here reported is a patient of Dr. E. L. Timmons:

Mrs. S., aged 48, German, married; one child 12 years old. Only one pregnancy. Father died at age of 72 with cancer of stomach. Mother and brothers and sisters all living and well. Personal history good.

In December, 1908, she noticed a small tumor in the lower inner quadrant of the right breast. It was not painful. It grew slowly and in February, 1911, she began to suffer pain in her back and the mid-dorsal region, more intense on left side and much more painful at night.

June, 1911, the tumor began to grow rapidly. Dr. Timmons was called in August and on August 19, 1911, I removed the tumor with the pectoral muscles, enlarged lymphatics and vessel sheaths. The tumor consisted of one large cancerous mass at the site first noted and several other nodules in the gland tissue. The liver extended 1½ inches below costal margins.

The recovery of patient was uneventful,

*Read at the Annual Meeting of the Colorado State Medical Society, Oct. 7, 8, 9, 1913.

with the exception of continued pain in back. Dullness, bronchial respiration with moist râles appeared in base of left lung. This disappeared in about five weeks. Three weeks after the operation she developed severe obstipation, which cleared up but returned in April, 1912, necessitating relief.

A thin-walled cyst containing a colloid material was bound to the ileum by a Jackson's membrane. Removal of both gave her complete relief. At this operation the liver was seen to contain numerous cancerous nodules on upper and lower surfaces. The gall bladder and ducts were free. A grave prognosis was given, but the patient improved and was soon doing her own work, which she continued to do until Thanksgiving, 1912. She had not felt well since the latter part of August. December 17, 1912, nine quarts of clear ascitic fluid were removed by trocar. The liver at this time extended to within two inches of pubic arch, and there was marked edema of the lower limbs.

From this time on the trocar was used every five to nine days until the 14th of March, 1913. At the third tapping the fluid was a muddy brown color, due to altered blood in the fluid. This discoloration was slightly noticeable at the next tapping. Again in the latter part of February, there was hemorrhage into the fluid from the trocar wound, which was noticeable at the time as the fluid came bright red after starting clear.

The patient's condition at this time was bad. She was cachectic, weak, bed-ridden; the edema had become general, metastases in all the palpable lymph glands, bone metastases as shown by a diploic growth in the right frontal bone just above the brow, and nodules appearing and disappearing in the scalp—their transient character is due, according to Handley, to the development of the tumor cells without production of tumor stroma, the absence of the stroma lead-

ing to their death and absorption. The urine scanty, the patient feeling no desire to empty bladder more than once in 24 hours. She could eat but little and was unable to sleep.

After the last withdrawal of the fluid, March 14, 1913, there was no return of the ascites, the edema disappeared rapidly, the urine increasing in quantity; the general pain and distress subsided, appetite and sleep returned, the metastases melted down until the growth on the forehead became small as a bean and the lymph glands but slightly larger than normal. The patient rallied like a young man from lobar pneumonia. This improvement continued and by May she was doing her own work and looking and feeling well.

In July she visited a sister in Denver and while there did a great deal of sight-seeing, coming home the latter part of the month not feeling so well. In August she began suffering pain in her bones, deep soreness in the tibia, knees and shoulders. The old metastases began to grow and now are almost as large as before her improvement. There is no ascites and the liver is not perceptibly enlarging. I removed a lymph gland from her neck. Dr. Loomis prepared sections, which are here for your inspection. The sections show a rapidly-growing cancer. To those of you interested in the cytology of cancer, the theory of Handley as to the life cycle of all cancer aggregates, the rôle and significance of nuclear changes and cell genesis, and the nuclear-cytoplasm relations, in fact the real cancer problem, the sections will have an abundant interest. I regret that the great clinical significance of this and similar cases forbids further discussion of this phase of the question.

For a time the patient recovered as if the usual relation of host and parasite had been reversed and she fattened upon the stored energies of the tumor. She grew rapidly in strength and flesh and the tum-

ors vanished. While the experimental evidence is against the ascitic fluid having any curative influence, it is hard to divorce in one's mind the sequence of events.

From December 17 to March 14, a period of 86 days, an average of 47 ounces of ascitic fluid collected in her abdomen each day, assuming no absorption. Suddenly the accumulation of fluid ceased and the patient began to improve. The hemorrhages into the abdomen, which occurred in December and February, may have been factors in bringing about the improvement. Autolytic changes in the ascitic fluid may have given rise to protective substances whether in the nature of antibodies, enzymes, cytotoxins, or salts of the metals that acting upon the tumor cells may have caused the retrogression noted.

The blood count, made September 23 by Dr. Bortree, shows hæmoglobin, 85%, 4,120,000 red cells, 9,000 leucocytes, 65% polys., 10% lymphocytes, small mononuclears 14%, transitional 1%, large mon. 14%, mast c. 1%. Red cells normal in size and shape, with considerable polychromatophilia. The blood pressure is 132 and the urine normal.

The case is a common one, in so far as it represents the history of cancer of the breast in the lower inner quadrant, with metastases in the liver and intestine, which had occurred before the operation as shown by no local recurrences.

It is remarkable for the rapidity of development of the ascitic fluid, for the degree of exhaustion before improvement and the rapid recovery with sudden cessation of ascites.

I shall not soon forget my feelings when, two weeks after I had been with Dr. Timmons to the home of the patient for the purpose of relieving her ascites that her few remaining days might be as comfortable as we could make them, and listening to her: "How long do you think it will be, Doctor?" and our equally resigned assur-

ance that we did not know, but not very long, and her final reply, "I hope not; I am so tired," she walked into my office, with a triumphant smile and the greeting, "I am getting better, Doctor."

If I had signed her death certificate two weeks before I think the sensation would have been but little less delightfully confounding.

And yet, standing in the presence of the final impending wreck, I feel that nature has flanneted her cure under my eyes and they have been too blind to see.

Cases of retrogression similar to this are not so uncommon in the literature of cancer. Even in our own city Dr. Martin has a case of like nature of exceeding interest which he permitted me to see and which I hope he will report in the discussion, but they are sufficiently rare in the experience of the average man to strike him with stunning force. They suggest a natural cure for cancer that sticks in your thought with an accusing persistence. It is like looking for the faces in a puzzle when you have found all but one. It must be there if only you could turn the puzzle to get the right perspective.

Cases of complete spontaneous cure where the evidence is complete are rare. Gaylord and Clowes, after reporting spontaneous cures in 23% of mouse tumors, report fourteen cases of spontaneously-cured malignant tumors in man. Two of these sarcoma. Among the cancers were two epithelioma, one scirrhus of breast, one malignant adenoma of rectum and seven cases of chorionic epithelioma.

A few cases have been reported of cancer of breast with metastases and ascitic fluid in one of the large lymph cavities with marked retrogressive changes; of these, Hodenpyl's case is the most instructive. This was a case of cancer of the breast with many recurrences after operations and metastases in neck and later large tumors in liver with chyloform as-

cites. The patient's death seemed certain. Hodenpyl does not say in his report whether the patient began to improve before any ascitic fluid was withdrawn. But she did improve, and four years after the first operation the tumor in the liver and the tumors in neck and chest had disappeared but the chyloform ascites remained.

Hodenpyl used this ascitic fluid first on mice with implanted and spontaneous tumors. The results noted were marked necrosis and diminution of their size, or a complete disappearance. He next tried the injection of the fluid on man, into the tissue about the tumor, and intravenously.

"The general effect of the injection was a temporary local redness, tenderness and swelling about the tumors which soon subsided, then softening and necrosis of the tumor tissue with absorption or discharge of the necrotic mass with healing," he says. "In all cases the tumors have grown smaller; in some cases disappeared altogether. In no instance has any other tissue in the body other than the tumor shown the least reaction after the injections, nor have any systemic effects been manifest after large venous infusion." Hodenpyl died soon after this and we have only the statement that "some cases were entirely cured." This statement time would probably have modified. The work of Wells in the examination of the ascitic fluid of the patient, and the work of Risley in the Massachusetts General Hospital have taken away any hope that these ascitic fluids have any value injected into one suffering from cancer.

After seven months' trial with a series of forty-five cases, in which Risley used groups of patients, one group with cancer serum and one with normal blood serum, hydrocele fluid, spermatocele fluid, ascitic fluid from alcoholic cirrhosis, ascitic fluid from incompetent heart and pleuritic transudates, he concluded that the use of

cancerous ascitic fluid removed during the active or moderately resisting stages of the disease has no permanent value in preventing or checking the growths of cancer or permanently benefiting the patient.

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LUDWIG'S ANGINA.

BY THOS. J. GALLAHER, A.M., M.D.
 DENVER.

Ludwig's Angina is far from common. Its early recognition and prompt surgical interference are essential to a successful result. It has been variously described, some authors going so far as to include retropharyngeal abscess under this heading. Keen says "it is an acute inflammation of the lymph nodes and connective tissue within the capsule of the submaxillary salivary gland. It is always serious in character and sometimes results in gangrene involving the intracapsular tissues or even the floor of the mouth or the structures of the neck, such serious consequences coming from the extreme tension to which the inflammatory products are subjected." The submental lymphatic nodes in some cases are involved as well as the structures and nodes about the sublingual gland. The infective organisms range from the staphylococcus to *B. coli communis*, the streptococci being most common. The infection is usually derived from the teeth, tonsils or ulcerations within the mouth. It quickly involves the lymph nodes and spreads by continuity of tissue. Ludwig thought

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that the lymphatics were not involved. Although the lymph nodes and the structures about the gland break down the submaxillary gland itself usually remains intact. The disease is ushered in by chills and high fever and a swelling quickly appears in the submaxillary region. It is situated deep in the neck and the ordinary signs of inflammation are lacking. The floor of the mouth becomes greatly swollen, often extending to the level of the teeth. Opening of the mouth is very difficult and may be impossible. Infection may extend to the tonsils, the retropharyngeal glands and the larynx. Edema of the larynx is a common complication. The prognosis should always be guarded. Many authorities place the mortality over fifty per cent. However, in cases early diagnosed and properly treated, surgically, it has been reduced to a gratifying degree. Ludwig's Angina has been followed in a few cases by the Woody Phlegmon, which greatly simulates malignancy, and is exceedingly slow in its progress lasting sometimes many months. When a correct diagnosis has been made it is well to open the phlegmon by free incision even before pus formation. Superficial incision is useless. The deep fascia must be opened and thorough drainage established. This is best accomplished by Hilton's method. Incision must be made in the median line also when the submental nodes have suppurated. It is well to supplement the surgical treatment with an autogenous vaccine. During the last twelve years I have encountered three cases of Ludwig's Angina in private practice. I will crave your indulgence to briefly report them:

CASE I.—MAN, AGE 35.

Floor of the mouth swollen to the level of the top of the teeth, presenting the appearance of an additional tongue. Beneath the chin was an external swelling, extending along both sides of the median

line. The infection was thought to be due to the use of a toothpick. External incision was promptly made, followed by an incision in the mouth, carefully avoiding the salivary ducts. A drainage tube was placed through the floor of the mouth, emerging externally. In this case the infection began in the submental glands. Patient made a prompt recovery.

CASE II.—YOUNG MAN 25 YEARS OF AGE.

Infection followed peridental suppuration of a lower molar. Patient extremely ill, temperature 104° and delirious. Floor of the mouth greatly swollen, large swelling in the submaxillary region in the right side; no fluctuation or redness. After free incision and thorough drainage, he made a slow but satisfactory recovery.

CASE III.—YOUNG WOMAN, AGE 27.

Occurring November, 1913.

Her dentist at one sitting removed two lower, partially erupted wisdom teeth. Three days after the extraction a deep swelling appeared in the region of the submaxillary gland on both sides. Floor of the mouth swollen, epiglottis edematous. Briefly, her treatment consisted in making external incisions on both sides, establishing drainage. The larynx was scarified and cracked ice used. Acute tonsillitis ensued, resulting in peritonsillar abscess in the left side, requiring incision. Tracheotomy became necessary. She made a complete recovery in a little over three weeks.

We believe that the removal of both wisdom teeth at one sitting was not wise, and it appears to us that it would be well in all such cases to remove, if possible, all sources of infection about the tooth before extraction. In making external incisions in any case of Ludwig's Angina it is best to do so under local anesthesia.

In conclusion, Ludwig's Angina must not be confused with the more superficial and less serious type of suppurations in the neck.

California Building.

*TRAUMATIC HYSTERIA.**

EDWARD DELEHANTY, M. D.
DENVER.

Traumatic hysteria is comparatively a new disease. Previous to the time of Erickson, who was England's foremost surgeon, little was known or written on the subject, although the literature on hysteria in general was enormous.

In 1868 Erickson published a book on what he termed "Spinal Concussion," in which he described a number of clinical syndromes, which frequently developed after slight injuries, especially to the spinal column, and that railway shock was the most prolific cause of them all.

He coined the term "railway spine" and placed the stamp of organic disease upon it.

All of the symptoms which he described under the terms "railway spine," "spinal concussion" and "shock" conditions which in the light of our present knowledge we know to be purely functional, he believed and taught resulted from organic changes in the spinal cord, from which recovery is extremely doubtful.

He called the attention of physicians, lawyers and people generally to the fact that a railway injury might be made a personal asset, by publishing many cases with the amount of money paid to plaintiff by railroad corporations.

The effect of such pronouncement coming from an authority which, in those days, was not to be questioned, can be easily imagined. Damage suits which previously were rare and brought for material injuries—the loss of an arm, a leg or an eye—became very frequent and the great majority were based on conditions described by Erickson.

Charcot, by his original work in cerebral and spinal localization, by hypnotism and

other means, proved conclusively that many of the conditions which were supposed to be based on organic disease were purely functional in their nature.

He showed that the hyperæsthesias over the various areas of the back, particularly in the lumbo-sacral region, the chief symptoms of "railway spine," did not correspond to the distribution of any nerve, and consequently could not be organic.

He disproved the analogy between cerebral and so-called spinal concussion, for, unlike the brain, the cord is surrounded by large quantities of spinal fluid and that it fills only a small portion of the spinal canal. He demonstrated that the cord is the best-protected organ in the human body and that any symptom resulting from slight injuries was psychical rather than physical. His dictum that "hysterical people were hysterical because they were mentally degenerated" applied as much to traumatic hysteria as any other form of the disease.

While Chareot and his followers did much to counteract the influence of Erickson, yet Erickson's book continued in its wide circulation, went through many editions and did yeoman's duty in damage suits long after Chareot was dead.

While the work today is obsolete, it was no doubt a potent factor in the origin of traumatic hysteria, for it placed before the minds of injured individuals, already hysterical, the three powerful factors in the etiology of the disease—suggestion, revenge and reward.

As an illustration of the power of suggestion, I report the following case:

A young lady was thrown from her carriage in a collision with a wagon owned by a wealthy corporation. She fell on her back, but suffered no inconvenience except slight general shock. She was accompanied by her mother, who was also injured, to a hospital. She was able to walk about, and, accompanied her mother to St. Anthony's.

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(Her mother had suffered a fracture of the ankle.) For three months she was able to work, but suffered at times with pain in her back. She finally consulted a physician, who examined her back, also testing her legs for anæsthesia and loss of power. At that time there was no evidence of cord involvement, but in the course of a week she became completely paralyzed in the legs. It was not long until her arms became involved, and finally the special senses. She lost the use of her voice and had difficulty in deglutation so that it was necessary to resort to rectal feeding.

For three months she lay in bed, completely paralyzed. During this time a damage suit was being instituted against the company for \$25,000. She was brought to Denver on a stretcher to attend the trial. She was taken to a hospital and at the request of the defendant I made an examination. She was pale and anæmic, and bore the appearance of having passed through a long siege of sickness.

There was complete paralysis of legs and arms. Anæsthesia was complete to all forms of sensation except about the anal and genital regions, where sensation was present, but diminished. Unexpected jabbing of needles into her body caused no expression of pain on her face. Her body could have been made a veritable pin cushion without any remonstrance from the patient.

The knee jerks were increased, but equal. There was no Babinski, Oppenheim or Gordon reflex. Superficial reflexes were absent. She had perfect control over her bladder and bowels.

Her pupils were widely dilated but responded to light and accommodation. The response, however, was not well sustained. An electrical examination disclosed no reaction of degeneration in any of the different groups of muscles.

While in the hospital, I gave a clinic on her to a body of medical students and

in her presence explained that there was no known organic disease of the nervous system that could give rise to the condition she presented, and that it was a pure case of traumatic hysteria.

The effects of the clinic seemed to have produced a profound impression on her mind, for on the next day she was able to move her extremities and take her food through the natural channel.

The paralysis, anæsthesia and the aphonia had almost entirely disappeared before she was aware of the results of the trial.

An indulgent jury awarded her some \$6,000 as balm for her fancied injuries. In less than a week's time after entering the hospital on a stretcher she was able to walk about and left with her physician for her home in the mountains.

I have been advised that "she has never been the same as before the accident." Here suggestion was supplied, unconsciously, no doubt, by her family physician. Each examination which he made suggested new symptoms, which later appeared, and when she became completely paralyzed he hypnotized himself into the belief that her condition was due to some obscure degeneration in the columns of the cord, for under oath he testified that she would never be able to walk and probably would not live a year.

Litigants of this class usually look to the family physician to support them in their fight against heartless corporations, and court records show that they are seldom disappointed.

The best service which could have been rendered this girl would have been plain speaking very early in the case. Had she been taught to turn a deaf ear to her distorted sensations, been discouraged in her desire to obtain revenge and reward by instituting a damage suit, she would have been saved much pain and anxiety, and avoided the demoralizing effect, which invariably follows in the train of damage

suits. Often following injury, hysteria will mask real disease, so for the protection of the patient the greatest care should be taken in the examination to reveal any organic disease.

If we apply our knowledge of cerebral and spinal localization; if we use the ophthalmoscope, the electric battery and other instruments of precision; if we keep in mind that pupillary anomalies, absent knee jerk, incontinence of bladder and bowel, anal and genital anæsthesia and Babinski extension reflex are all inconsistent with functional nerve disease, there is little likelihood that organic disease will be overlooked. The following case is reported to illustrate the difficulty in eliminating organic disease.

R. S., age 39, married, three healthy children. No history of nervous trouble in family that he knows of. He was well as a child. He remembers having none of the diseases of childhood. He went to school at irregular intervals and reached only the fourth grade. He had no sickness during his boyhood. He worked on a farm, and was in the cigar business. He was married at the age of 17, and up to that time had perfect health. At the age of 18 he had a sickness which he described as of a spasmodic nature, which came on after a spree. This lasted for three or four days, with full recovery. (Dr. Bull of Grand Junction informed me that he attended the boy; that he was called to the house to attend him for hydrophobia; that he regarded the condition as hysterical.) He worked for the railroad off and on at different times. He lost no time on account of illness until the year 1908, when he was thrown off of an engine and injured his back. He was unable to do heavy work for a year and consequently was not in the employment of the railroad. He did such work as selling sewing machines, etc. In 1909 he went back to work on the railroad, firing an engine. He says he was never as strong as before

on account of the weakness of his back. He was able to perform the duties of a fireman up to the time of his present trouble..

On April 30, 1911, he was in a railroad collision. He fell through the floor of the caboose. He does not know how he struck, but he knows that he was unable to move his legs and crept out of danger by the use of his hands only. Says he felt as if his body was cut in two, and was unable to feel anything in his legs. At the same time he complained of cramps in his tongue and it was several hours before he was able to talk. This, however, disappeared in the course of two or three days. The next day he was brought to a hospital where he remained three and a half months. During this time he complained of pain in the back around the groin and he was unable to lie flat on his back at any time since the accident. There has been no change in his condition as far as being able to move his legs. His bowels have been constipated and he has had difficulty in urination, stating that he must use the vessel as soon as the desire comes. He has never soiled his linen, however. He says that he takes nervous spells at night. Says his appetite is not good, but his weight remains about the same.

On examination I found the patient unable to walk or move his legs. He goes about in a wheel chair. His general appearance is that of a healthy man. He is unable to flex or extend his toes, legs or the hip in any direction. There is marked foot drop in both feet, so much so that the feet are on a line with the legs. Measurements show the right leg is smaller than the left, the difference in the calf being $1\frac{1}{2}$ " ; 7" above the patella there is $\frac{3}{4}$ " in difference. There is no weakness or paralysis in the arms, neck or face. The deep reflexes are all present, increased in degree but without the sustained clonus of an organic spasticity. Superficial reflexes are all present and normal, with the distinct absence of the Babinski phenomenon of the

toes. The compression of the calf muscles is also negative as far as evidencing a pyramidal tract involvement is concerned, and the Oppenheim reflex is likewise negative. The anal and gluteal reflexes are present and prompt. There is complete anæsthesia to all forms of sensation in the legs. The anæsthesia is found to end abruptly above at the crest of the ilium, and following the line of the Pouparts ligament. The external genital not being involved. The line of pain sense is somewhat lower than tactile and thermis. Electrical reaction of all of the principal muscle groups of both extremities was normal, except diminution of faradic irritability. Examination of the eyes and other special senses prove negative. There is considerable œdema of both feet. Although confident that no organic disease existed, yet, on account of the presence of the œdema, the lessened faradic irritability, the supposed disturbance of the bladder, it was thought best to bring him to Denver for further examination.

He was placed in St. Joseph's Hospital, where woolen applications were applied to his feet, reducing the amount of œdema, and thorough electrical re-examination was made. The lessened faradic irritability persisted, but there was no change in the formula to galvanic current, proving conclusively that there was no reaction of degeneration.

Dr. George Moleen was asked to examine the man, and concurred in the opinion that the condition was functional or hysterical in character.

Rather than take a chance with a jury in a damage suit which was pending, the railroad company, conscious that it was being mulched, paid a considerable amount of money and took a release. When last heard from he had sufficiently recovered to be able to work in an automobile garage somewhere in Oklahoma.

Having eliminated organic disease, one of the hardest problems which confronts

the examiner is to determine the presence or absence of malingering. It is an injustice to brand all functional cases as malingerers and impostors, as is so often done in the claim agent's office. An "Uncle Sam's Plaster" placed on the back of an individual suffering from hysterical paraplegia does not always effect an immediate cure.

The broad statement that all these cases get well as soon as their claims are settled is manifestly unfair and untrue. That some of them do is true, but by no means all. Erickson erred in the pathology of the disease, but was correct when he said that many never recovered.

It must be remembered that hysteria is a disease; but, like alcoholism, it is self-induced. Legally, drunkenness is no excuse for crime, neither should traumatic hysteria be an excuse to mulct wealthy individuals and corporations out of large sums of money.

Malingering pure and simple is rare and seldom reaches the examining physician's office. His behavior is entirely different from a hysterical person. He is suspicious in his manner, usually sullen, and responds differently to the same tests at different times.

The following case illustrates the difficulty of differentiating between hysteria and malingering:

J. S., married. Age 27. There is no nervous or mental disease in his family. Had scarlet fever when 12 and typhoid at the age of 18. No sequelæ following either. Denies any venereal disease. Was perfectly well until August 25, 1906, when he was in a railroad wreck. The train went through a bridge and he says he was unconscious for a short time. He was taken to a hospital and when he gained consciousness he found that he was paralyzed in both legs. Says that he was unable to feel anything in either leg, but this anæsthesia disappeared and left within four or five days. He also recovered from the paralysis of the

left leg, and in twelve days was able to be about on crutches. The left leg at the end of this time was perfectly well, but the right leg remained paralyzed. He says that he suffered pain in the lower portion of his spine, extending up the back to the base of the skull.

On examination, October 7, 1906, he drags his right leg after him when he attempts to walk; he is unable to flex or extend his toes, the foot or the leg; measurements show about one inch waste in the right leg; sensation is normal on the left side, but diminished to all forms on the right; the line of demarkation is a little below the Pouparts ligament, and makes a circle around the leg. There was no change in electrical reactions.

I examined him again on December 12, 1908, also on February 5, 1912, with scarcely no change in the condition of six years before, except that he had lost flesh and presented a haggard appearance.

My first examination was at the instance of his attorney, who had brought suit against a railroad corporation. The character of the paralysis, the gait, which was dragging in type, the glove-shaped distribution of the anæsthesia, no change in the electrical reaction eliminates the possibility of the condition being organic.

Dr. Howell T. Pershing examined him for the railroad company and testified that the condition was functional in its nature, with possibility of some of symptoms being malingering.

The jury rendered a verdict for the full amount, and only a short time ago the Supreme Court sustained the lower court, and the plaintiff was paid over \$19,000, the largest damage ever recovered in this state for personal injury.

I was recently informed that he had sufficiently recovered to be able to drive a hack. He received the reward for which he fought for six long years, but from my last examination of him, and from what

could be learned regarding him, I am convinced that the fight has left him one of those hopeless neurotic wrecks with which the shores of the medico-legal world is strewn.

DISCUSSION.

George A. Moleen, Denver: The importance of this subject I think arises, as has been stated by the essayist, out of the damage that might be done to individuals through the prolongation of litigation as the result of the functional neurosis, as well as the damage that is done by allowing the successful prosecution of the corporation in view of such a functional neurosis. Aside from the cases which come under the class of malingerers the successful termination of such a suit only lends encouragement to others to follow the same course with the same end in view. If we confine ourselves to hysteria, as well as other neuroses, we may say with Charcot that all the neurotic disturbances are traumatic. Some few are psychical, while others are physically traumatic. The result, however, is the same, but necessarily, as has been said, presupposes a defect upon the part of the individual through which he becomes hypersuggestive; he is influenced by the surroundings which are to him suggestible. This was pretty well shown, I think, not only by Charcot and then students of Charcot—Bleuler and Freud—after him, but culminated when Babuski announced the dictum that no condition could exist in hysteria which could not be reproduced by suggestion or hypnosis. That pretty well cleared the field of organic disturbance at the basis of the so-called hysterical conditions, in spite of those who had maintained that so many of them resulted in deformities and contractures of long standing, which the Charcot clinic is able to exhibit to the present day. We cannot ignore, however, the modern line of study in the course of neurosis in general, following upon the work of Freud and Bleuler in Charcot's clinic, who made researches along the line of psychic analysis. This was followed then by Freud and Bleuler in their work on the study of hysteria.

There was a great deal of objection to the principle laid down by them through their frequently finding the sexual as a fundamental factor in this functional neurosis. However, the more one follows with the student of psychoanalysis I think the more we are inclined to agree that, at least, there is a probability of it being concerned in a great many.

It is interesting to know that while Freud and Bleuler, together with Janet, were students under Charcot, after a time their lines of study were almost parallel to Janet's.

Time will not permit of my entering into the psychological phases as developed in these schools any more than to say that hysteria is a reaction against a troublesome emotion, and it was found that when this emotional disturbing element was brought to the surface; in other words, when it was brought up and made

to react against itself, and the emotions which were suggested by it thoroughly reacted, whatever paralysis obtained disappeared very promptly.

Such an experience occurred in my experience in a case of hysterical paralysis which was very interesting to note, and had been existing for several months and had had a tenotomy to relieve a supposed contracture of the tendo Achillis in a maiden lady of 45 years; and in tracing out the psychic trauma, found it to be dated back to her twelfth year. Agreeing with the other observers it was of sexual nature, but after bringing that up to consciousness "abreagieren," as the Germans would say, the paralysis disappeared in the course of four or five days and she walked out of the hospital.

I should like to emphasize the point made by the essayist in that a failure to recover after the litigation has been terminated is not an evidence of the absence of the hysterical nature of the paralysis particularly, and that would lend some weight to the views of Freud, in that it was thoroughly reacted and that it was truly hysterical and not partly simulated, as is probably the case in many instances wherein the end aimed at is some amount in recompense.

I think simulators are not common. They are not difficult to recognize, as they usually overplay their parts. In some of those cases, however, we have one prominent factor, to which reference has been made, and that is the substitution of original symptoms. If that is found, of course, one can observe that we are dealing with simulation. In an old injury, for instance, I saw a floating patella with a hypermobile knee joint existing in a woman, which evidently had existed for a long time, but, having fallen in a ditch, sued the city because the ditch should not have been there, for damages to the knee. It was very evident that the affair was of very long standing, and is known as a substitution of original injury. It was brought forward to correspond to the fall in the ditch, and was very evidently a case of simulation and not of hysteria.

These cases of hysteria and simulation should be thoroughly separated and should be dealt with carefully, and I think that the legal department of many corporations should be cautioned against the advisability of settling with those people for any amount or any sum, because it only lends encouragement to others to do the same.

THE PRESENT STATUS OF RADIUM IN SURGERY AND MEDICINE.

W. W. GRANT, M.D., DENVER.

This new element has come to the front so rapidly as a new and profound remedy for cancer, especially as exploited in the daily press, that the time seems opportune to call a protest. The gross exaggerations and the sensational reports bid fair to result in a saturnalia of radium quackery, and a rush to the promised land equal in its audacity and falsehood to the worst charlatanism of the age. The claims are not limited to cancer, but already it is curing joint troubles, rheumatism, etc. Very soon we expect to see it in the cure-all list so common to the armamentarium of the average impostor and medical quack. If those participating in the investigations would carry on their work in a purely scientific spirit and manner and make no pretentious reports until definite results are obtained, they would confer a great blessing upon the thousands of innocent sufferers who are deluded into false hopes and impoverished pockets.

A Pittsburg firm, among others, is now engaged in the delectable business of sending out reports of fakish reports of radium cures, etc. It is invidious to compare such men, drunk with cupidity, to the locust pest, which is credited with destroying vegetation only about once in seventeen years, while these human parasites who feed on the credulity and misfortunes of mankind are perennial and as thick as the leaves in Vallombrosa. Some of them are styled regulars, others irregular. Note the following from Philadelphia, February 3, daily press:

"Radium injected into the veins of patients suffering from chronic rheumatism of the joints is producing wonderful cures."

A well-known Denver physician, in a

A special afternoon will be set aside at the state society meeting, for the report of clinical cases; time for report seven minutes. Those who have cases that they would like to report should at once notify Dr. Aubrey H. Williams, Metropolitan Building, Denver.

public interview, states that he "has seen cancers that you would have pronounced hopeless, cured in three weeks," but he doesn't vouch for its permanence.

Why is the manifestation of radium "uncanny?" We do not understand; therefore it is "miraculous." Mystery is the apology the world offers to ignorance.

Since the days of David Hume the scientific world, especially the medical staff, has not accepted miraculous intervention as a satisfactory explanation for the cure of disease. The day is past when we need invoke the manifestation of miracles as an explanation of causes and phenomena, simply because we do not yet understand them, neither will the thunders of Olympus prevent a scientific solution and a final rational interpretation of every cause and effect.

The press reports that a Dr. Campbell of Pennsylvania, interested in a radium clinic, testified before the mining committee of Congress that radium was not devoid of danger to healthy tissues, and in reply to a question said that two out of five he had treated died under its use. "I simply feel," he said, "that I've just shoved those patients over a little bit quicker."

Not a day passes that some daily newspaper does not print highly-colored items of "news" as to the curative properties of radium. They are cured, on paper, in a few weeks—but all the advanced cases so far have, under the radium treatment, followed the usual course—death being hastened by radical measures.

Dr. Howard A. Kelly's name is more actively associated with the use of radium than that of any other distinguished surgeon in this country, and that his views may be understood by the profession, I take the liberty of publishing the enclosed letter from him. The occasion was a letter of inquiry from me as to the use of radium in inoperable sarcoma, I having under observation a case of this nature orig-

inating in intra-abdominal testicle, the letter of inquiry being written at the request of friends of the patient:

"Baltimore, December, 1913.

"DEAR DR. GRANT:

"I have no idea what radium would do in a case like that. The only possible chance of influencing the tumor would be to open the abdomen and implant a gram of radium in different parts of the tumor, and twenty-four hours later to undo the stitches and take the radium out and then close the abdomen. I think this does offer a definite chance. I cannot say more than that. I could apply the radium some time about Christmas or New Year's. Faithfully yours,

"(Signed) HOWARD A. KELLY."

Under the head of "Current Comment" in the Journal of the American Medical Association, in recent issue, I would call attention to Sparman's report of fifty-three cases treated by radium. Eleven died since the treatment; in six the growth disappeared; five seem improved, seven aggravated, and in twenty-four treatment discontinued because condition of patients had become worse. He shows also that "the effect of the rays extends beyond the cancer into sound tissues and wreak damage there, and are liable to be harmful." Still he sees a use for radium in non-operable cases of cancer.

The Health Department of New York City has just issued a timely warning against quacks who might take advantage of the popular interest excited by investigation of radium as a cure for cancer which, as yet, "is a matter of experiment unless in the treatment of external cancers, particularly of the skin. "Thus far there is no proof that radium has finally cured any one case of advanced and disseminated cancer."

Dr. Moore, a government official, investigating the properties of radium, stated,

in a recent lecture here, that the gamma rays would not burn, differing in this respect from the x-rays, which have to be shielded; that the positive and negative elements of the radium would burn but could be easily eliminated by lead, while the gamma rays would penetrate copper metal an inch thick. It is therefore much more powerful than the x-ray.

From present experiments and experience we are justified in saying that radium will cure the superficial cancers—such as occur commonly in skin and exposed mucous surfaces—the same as are usually amenable to successful treatment by the x-ray and the knife. In the inoperable cancers it has not passed yet the purely experimental stage. It is hoped that it may

prove a panacea for advanced malignant diseases, but it is entirely premature to attempt to formulate any positive statements regarding it. The medical profession, not the newspaper fraternity, will make the final answer.

Radio-activity has its appropriate scientific place, but as a remedial therapeutic measure it is destined to as great abuse as has been accorded uric acid and auto-intoxication as **causes** of disease. Its scarcity and the extreme cost of its production, as well as its claims to consideration in the treatment of disease, make it highly important to strip the discussion and reports concerning it of all exaggeration, in order that its real value to medical science, and therefore to humanity, may be determined at the earliest possible date.

EXCERPTS FROM RECENT LITERATURE

Surgery of the Thyroid; a Critical Abstract.—Despite the laborious and intricate research that has been directed towards the study of the thyroid gland, and notwithstanding the great number of already established facts concerning its physiology and pathology, much yet remains unknown. The final chapter has as yet not been written.

Bircher has recently published his results obtained in the production of goiter experimentally in rats. By feeding these animals with water containing certain colloidal matter he was able to produce a goiter in 95.1 per cent of cases. These experiments will serve to illuminate the etiological problem of this disease, which is as yet very obscure.

Regarding the pathology of this disease, Wilson has shown that there is a definite relationship between the symptoms in a given case and in the quantity of functioning tissue and absorbable secretion. The parallelism between the clinical symp-

toms present and the laboratory findings are so definite that the pathologist may write accurately the history and stage of 80 per cent of the cases of exophthalmic goiter. Under the exact research of the present time, increasing interest is being attracted to the interdependence of the thyroid and the pituitary body. However, the future must show the exact means by which the physiologic balance and correlation of the functions of the ductless glands is maintained.

Clinically we may differentiate the following varieties: (A) Adolescent goiter and goiter of pregnancy; (B) colloid goiter; (C) adenomata (encapsulated and non-encapsulated); (D) mixed forms; (E) exophthalmic goiter.

Whatever may be said of the four first-named varieties, it is almost universally agreed that the treatment of Graves' disease must be transferred from the internist to the surgeon. Kocher advocates the operation in every case where the vascular

symptoms are present, even in the early development of the disease. In that case the operation is practically without danger. Mayo, too, is of the same opinion, advocating the ligation in early cases and the resection in more advanced cases. The question is, when is the safest time to operate? The important contraindications to operation are marked mental irritability, rapid loss in weight, great muscular weakness, dilatation of the heart, exceeding one inch, diarrhea, vomiting and edema. It is therefore highly essential that these patients be carefully prepared for operation. It is in this interval that the patient's "margin of safety" must be increased to the maximum and a final analysis of the case be made. Each patient is to be considered individually and operation chosen to meet the existing conditions. A successful operation is usually followed by prompt and marked improvement of the patient. However, improvement is sometimes deferred several weeks. Prolonged rest is to be enforced after a goiter operation. Time is required for the accomplishment of regeneration.

O. M. S.

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The Effect of Opiates on Peristalsis.—

E. Stierlin and N. Schapiro (Munchen Med. Woch., 1913, Six, 2714) in experiments on animals, found that opium does not have so much effect in retarding peristalsis of the intestine, as it does towards inhibiting central defecation reflexes and thus causing a resulting delay in the contents of the sigmoid.

Blood Picture in Status Lymphaticus.—

Siess and Stoerk (Wein. Med. Woch., 1913, LXIII, 1123) diagnosed a series of twenty-three cases of status lymphaticus, by reason of the following symptomatology: Atypical arrangement of hair, abnormal length of extremities, scaphoid scapulae, a wide pelvis in male, narrow in female, adiposity of the reverse type (in the lower half of the body in males, upper half in females), poor development of breasts, general glandular hyperplasia, small but elongated heart, associated with a strong apex beat and an accentuated aortic second sound, low blood pressure, psychoneurotic manifestations, vagotonia and infantile, type of epiglottis. These cases showed a blood picture as follows: Reds, between 3,000,000 and 5,000,000; hemoglobin generally high; whites, 4,300 to 10,000; neutrophilic leucocytes, large mononuclears and transitionals within normal limits, lymphocytes rarely exceed 2,000 per c. e., but the chief characteristic regarding them is the unusually abundant protoplasm; eosinophiles are consistently low; blood platelets abundant and a noteworthy feature.

Further Observations on the Organism of Hodgkin's Disease.—

The second paper by Bunting and Yates, dealing with inoculation experiments in the macacus rhesus monkey, referred to in last month's excerpts, carries out the original claim of the causative factor, named by the investigators corynebacterium Hodgkini. By repeated injections of these bacilli a progressive enlargement of a single group of lymphnodes has been produced, showing histological changes identical with those found in human cases of Hodgkin's disease. Clinically, the monkey's blood showed an increased percentage of mononuclear elements, an increase in eosinophils following a primary fall and an early increase of basophile blood changes

decidedly characteristic of human Hodgkins.

Billings and Rosenow have also corroborated the finding of a bacillus identical with that described by Bunting and Yates, in these cases a pure culture. Autogenous vaccines were made and administered in doses raging from 5 to 10 millions gradually increased to 100 millions, subcutaneously repeated every five or six days. Results were good, showing a gradual reduction in the size of the enlarged lymph-nodes; also the spleen and an improvement in the anasarca, dyspnea and general debility.

News Notes

Dr. Bernard Oettinger has been unable, on account of sickness, to attend to his practice for several weeks.

Dr. Stanley Eichberg has been chosen secretary of the Medical Advisory Board of the National Jewish Hospital for Consumptives.

Dr. O. M. Gilbert, president of the Colorado State Medical Society, attended the meeting of the Missouri Valley Medical Association held at Lincoln, Neb., on March 26 and 27. He read a paper entitled "Differential Leucocyte Count in Relation to Tuberculosis and to Altitude." Dr. Gilbert's paper received many enthusiastic compliments. The meeting was an excellent one and was attended by about one hundred and fifty men from the Middle West.

Dr. R. W. Marshall of Denver has gone to Europe for six months' post-graduate study.

The magnificent seven-story First National Bank Building, located at Fifth and Main streets, Pueblo, is just being completed. The following physicians have already moved their offices into this building: Drs. H. M. Thompson and Fritz Lassen, Dr. W. E. Buck, Dr. F. E. Wallace, Drs. H. A. Black, W. T. H. Baker and John Schwer; Dr. J. J. Pattee, Drs. M. J. Keeney and C. W. Maynard, Drs. A. T. King and C. V. Marmaduke, Drs. T. A. Stoddard, F. M. Heller and N. G. Alcock and Dr. J. H. Woodbridge.

Dr. F. E. Wallace underwent an operation for appendicitis March 24 and is recovering nicely.

Dr. C. F. Taylor and Dr. W. H. Baker are attending a post-graduate course in Chicago this month.

The Supreme Court has sustained the provision of the law empowering the State Board of Medical Examiners to revoke a license for the publishing of an advertisement relative to diseases of the sexual organs. The case went to the court on an appeal of one Dr. Cheneweth, whose license had been revoked.

Dr. J. B. Crouch, resident physician at the Union Printers' Home, Colorado Springs, Colo., recently returned to his home from St. Francis' Hospital. He is rapidly regaining his normal condition following a gastroenterostomy performed for the relief of a gastric ulcer.

Dr. Guy S. Vinyard of Colorado City is convalescing from a recent attack of pneumonia.

Boulder is to be made a model as a healthful city, according to plans formulated at a banquet given by the city council to Dr. Livingston Farrand, the new president of the university, who was formerly secretary of the National Association for the Prevention of Tuberculosis and who is one of the most prominent men in the country today in the matter of sanitation and public health. The city health department is to be turned over into Dr. Farrand's exclusive control and an expert sanitarian employed as health officer. The plan of Dr. Farrand is entirely unique in the history of public health work, at least in this country. The sanitarian will be an expert in all matters of public health, but not a doctor. He will not attempt to rule the health affairs of the city by a list of arbitrary regulations. His work in part will consist in spreading knowledge of the best methods of conserving the health of the community. He will take and keep a health survey of the city, investigating everything that has to do with public health, such as source of water, food, sewage and the like. The public schools, buildings, private houses will all be studied from a public health standpoint. Contagious and infectious diseases will be referred to an advisory board consisting of members of the university medical faculty and physicians of this city for action.

Dr. Otis Orendorff of Cañon City sustained a serious injury to one eye recently while cranking his automobile. The machine "kicked" and jerked the Doctor against the car, breaking a spectacle glass and driving the particles into his eye.

Dr. F. A. Burton has recently returned from Europe, bid his Denver friends farewell and departed to his new field of practice—San Diego, Cal.

Constituent Societies

PUEBLO COUNTY.

The Pueblo County Medical Society met in regular session March 3, President Singer presiding.

Under clinical cases Dr. Wallace presented the same boy with an anterior dislocation of the lens, whom he had presented previously, to show the progress made.

Dr. Baker of the program committee spoke in reference to having an open meeting at the date of Dr. King's paper, which paper is on "Civic Control of the Social Evil." After considerable discussion this was left by common consent to the program committee and Dr. King.

The paper of the evening was presented by

Dr. Wilbur Lucas on "The Treatment of Acute Lobar Pneumonia." The discussion was opened by Drs. Elder and Finney.

The applications of Dr. Lockridge and Dr. Needles were received and referred to the membership committee.

After reading and approving the minutes of the previous meeting the society adjourned.

J. H. WOODBRIDGE,
Secretary.

WELD COUNTY.

The regular meeting of **Weld County Medical Society** was held in Dr. Knowles' office Thursday evening, March 5.

The meeting was called to order by President Pogue, who called upon Dr. Knowles, chairman of the board of censors, to report upon the applications for membership of Drs. W. E. Thompson, W. H. Shields, W. P. Allen of Greeley and Dr. D. J. Horton of La Salle.

The report in each instance being favorable they were voted on, the vote being affirmative, the secretary was instructed to enter their names upon the membership roll.

No other business appearing the members were treated to a demonstration of the new x-ray apparatus recently installed by Professor Knowles, which proved highly edifying and instructive.

Meeting adjourned at 10:00 p. m.

The regular meeting of **Weld County Medical Society** was held in the city hall Thursday afternoon, March 12, at 4:30 p. m.

The meeting was called to order with President Pogue in the chair and a large attendance of members. Regular business and the reading of minutes were dispensed with and the special program taken up. Dr. Pogue introduced as an opening number Dr. Philip Hillkowitz of Denver, who based his remarks upon the "Significance of the Wassermann Reaction." The doctor and his address were well received, his remarks affording new ideas upon the value of this test. Discussion by Drs. Gilbert of Boulder and Pogue of Greeley.

The next paper was given by Dr. C. D. Spivak of Denver, who outlined for his audience the progress of gastro-enterology for the year 1913. The doctor laid special stress upon the causation of gastric ulcer and the relative values of operative and medicinal treatment of this malady. The opinions of the doctor will possibly prove an antidote to the impression that is inclined to prevail, that surgery offers the only treatment of value in this disease.

Discussed by Drs. Elder, Gilbert, Spalding, Knowles and Spivak. The meeting now took a brief recess to meet at the Sterling hotel, at 7:30 p. m., where the program was continued with a beefsteak lunch as an introductory number.

Following this the president of the society made an extemporaneous serio-comic address, closing by introducing the Hon. C. S. Elder, M. D., of Denver, who acted as toastmaster for the evening. Dr. Elder proved an excellent choice and vindicated the judgment of the executive in imposing upon him this task. After warm-

ing up to the subject in pleasant accents based upon an intimate knowledge of Chesterfield and Macaulay he called upon Dr. O. M. Gilbert president of the state society, to defend his native state, "Missouri." Dr. Gilbert was in good trim and forsaking early the haunts of his childhood made a fervid appeal for harmony and co-operation in the ranks of the profession. The second toast, "The Old Oaken Bucket," was responded to by Dr. C. A. Ringle. The doctor was firstly in a reminiscent mood but soon passed to the serious phases of his subject dealing with the shape, size, materials and method of construction (I said bucket, later discussed its contents and closed with a panegyric on the immortals who from the days of Adam had drawn inspiration from this inexhaustive source. The third toast was delegated to Dr. C. D. Spivak of Denver, who, in thoroughly progressive style and manner took up the merits of the "Full Dinner Pail." The pail, he regretted to state with authority, was not full, and G.O.K. when it will be full under the existing conditions. The next toast, "313," was to have been taken up by Dr. M. Black, in a rather humorous manner, the doctor wired the toastmaster that he had been unfortunately detained by a primipara. Dr. J. G. Hughes responded to the toast "Intelligent Co-operation" in which he extolled the virtue and the value of industry and combined effort. In responding to the toast "Affinities" Dr. Philip Hillkowitz was rather reticent in his advice as to the best method of choosing the same, maintaining, however, that a well-selected affinity added breadth to the mind and relieved the monotony of professional duties. After Mr. Seeley had discussed the merits of Ess. Pepsin, Dr. Broman responded to the toast, "Auld Lang Syne," which was taken up by the entire audience in the old refrain.

The meeting adjourned in fairly good order at 11:45 p. m. CHARLES B. DYDE.

EL PASO COUNTY.

The regular meeting of the **El Paso County Medical Society** was held at the Antlers Hotel on March 11th, at 8:15 p. m.

The president of the society, Dr. Chas. Giese, presided.

The minutes of the previous meeting were read and approved.

There were thirty-nine members present.

The special committee on library has no report to make.

Dr. A. L. Winston of Colorado Springs was unanimously elected to membership in the society.

The proposed amendment to the by-laws increasing the annual dues of the society was defeated by a vote of twenty-six to seven.

Program:

Spinal Puncture, Dr. F. T. Stevens.

Discussed by Drs. P. A. Loomis, L. W. Bortree and G. B. Gilbert.

Hemoptysis and Its Treatment, Dr. J. R. Stewart.

Discussed by Drs. Martin, McConnell, Gilbert and Giese.

There being no further business the society adjourned to the dining room where lunch was served.

G. B. GLIMORE,
Secretary.

PUEBLO COUNTY.

The Pueblo County Medical Society was called to order in regular session, March 17, by President Singer.

The paper of the evening on "Occupational Diseases" was presented by Dr. J. A. Black. Special attention was paid to "Lead Poisoning." Dr. Adams gave the pathology of "Lead Poisoning."

The applications of Drs. Lockridge and Needles were reported favorably by the membership committee.

The application of Dr. Vogt was read and referred to the membership committee.

Dr. Epler reported the presence of Epidemic Meningitis at Ordway, Colo.

The secretary was ordered to secure more chairs for the society hall.

Dr. Fred Heller displayed some pathological specimens from a subject of acute tuberculosis.

The society then adjourned.

J. H. WOODBRIDGE,
Secretary.

COLORADO OPHTHALMOLOGICAL SOCIETY.

The regular monthly meeting of the society was held March 21, 1914, in the offices of Dr. Aufmwasser.

Attendance, twenty-seven.

Dr. Strader presented a man whose left eye had, on March 3, been penetrated by a large piece of steel, which was promptly removed with the magnet. When next seen, a week later, there was a distinct ring opacity at the anterior surface of the lens (Vossius lens ring). The opacity was still faintly discernible.

Dr. Orendorff gave an account of a personal injury of the lid and orbital tissues by a broken spectacle glass, due to a blow from the crank handle of his automobile. Apparently some of the fragments remained imbedded in the soft parts and were only gradually working their way to the surface.

Dr. Aufmwasser showed a wet specimen, demonstrating the Yankauer operation for dacryocystitis.

Dr. Bane reported the case of a young woman whose persistent frontal headache, unrelieved by correction of refractive error, had completely disappeared after removal of a portion of each middle turbinate bone.

Dr. Bane showed drawings illustrating a case of extensive laceration of the upper lid and the results obtained by careful suturing.

Dr. Jackson reported the case of a young man whose astigmatism had diminished in the course of two years from R. 3 D to 0.25 D., and L. 2.75 D. to 0.50 D.

Dr. Jackson reported the case of a man of 26 years who had become rapidly blind in both eyes. The X-ray examination was negative, as

was that of the nose, so far as sinusitis was concerned. There was nothing in the fundus to explain loss of vision. Under sodium salicylate the vision had steadily improved to R. 1 20, L. 1 15. There was a small central scotoma, and the lesion was probably in the chiasm.

Dr. Crisp reported the case of a boy of 9 years, refractive correction of whose better eye was apparently responsible for the relief of convergent squint of the other eye, which was amblyopic.

Dr. Crisp reported a case of quadrantal anopsia of one eye, apparently due to a minute apoplectic lesion, possibly in the occipital cortex.

Dr. Jackson showed small test type cards on which an attempt had been made at standardizing the patient's vision in conformity with international broken ring test of visual acuity.

Dr. A. L. Davis gave brief reports of three cases.

WILLIAM H. CRISP,

FREMONT COUNTY.

The Society met at Canon City March 23rd with the following members present: Drs. Goodloe, Davis, Graves, Holmes, Palmer, Maxwell, Orendorff, Adkinson, Cummings, Little.

The first number on the program was a paper on Leukemia, by Dr. Little. He gave a full clinical history of this interesting disease with a report of two cases and exhibition of blood slides. The second paper by Dr. Cummings, entitled "The Advantages and Disadvantages of Contract Practice." The essayist discussed the advantage to the corporation and, with certain classes of corporations, the obvious necessity of retaining a surgeon by contract. The advantages and disadvantages to the employees; and the harmful influence in the system to the contract physician himself and his fellow practitioners.

This paper naturally elicited a full and free discussion.

Dr. Graves exhibited two stones removed from the urinary bladder, one of unusual size. Also X-ray photographs of a case of osteomyelitis.

Dr. Charles Cattermole of Chandler was elected to membership. After adjournment the usual midnight lunch was enjoyed.

W. T. LITTLE,

TELLER COUNTY.

The Teller County Medical Society met in regular session at the Sister's Hospital, Cripple Creek, on Tuesday evening, March 31, 1914.

This meeting was the best the society has had for some time, as you will see from the following program:

The society took dinner together at the Sister's Hospital at 6:30 p.m., after which there was a paper on "Cystoscopy" by the guest of the society—Dr. J. B. Davis of Denver. This was followed by the exhibition of two clinical cases, on which was demonstrated the use of the cystoscope. The society adjourned at a late hour, to meet in Victor the last Tuesday in April.

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Editorial Comment

THE BOULDER MEETING.

Preparations for the next meeting of the Colorado State Medical Society are progressing rapidly in Boulder. Every member of the society should also begin to plan to be at this convention. Requests for papers have already been published. Whether one writes or not, it is a duty and a privilege to be present to express one's views about what has been written. One can read always, hear what has been carefully prepared often enough, but the opportunity of being in the presence of a mind in serious action is not common. The discussion furnishes the chief interest at medical meetings. It is open. It should be general. No one will care for a society in which he does not form a moving unit. There is a lesson in this. Indifference points to faults of our own rather than of the society. It means timidity or uncertainty about our learning and experience.

The time for the next meeting has been definitely set. It is the 8th, 9th and 10th of September. The weather at this season is almost invariably good. The new Boulderado Hotel will have been deserted by summer guests. It will be surrendered, almost entirely, to the uses of the society

and its members. The O'Conner Hotel, an older institution, is being converted into a modern and attractive establishment. Should these buildings prove inadequate, the ample fraternity houses about the University campus will be ready for occupation. Boulder is accustomed to the accommodation of at least a thousand non-resident students, who will not have arrived when the Medical Society convenes. With such facilities there can be no possible scarcity of places for the visiting physician to lodge. Meetings will be held in the commodious hall of the Physicians' Building. Some of the diversions of the occasion have already been arranged. The authorities of the State University will entertain the members of the society at a complimentary luncheon. Already it becomes apparent that the meeting is to be a scientific and a social success.

CRUSADE AGAINST QUACKS.

The Rocky Mountain News has undertaken a crusade against quacks. As these people depend entirely upon newspaper advertisement, a little detraction is fatal to their business. They prey upon the credulous and ignorant. Some people believe whatever is set in type. They are attracted by alluring advertisements, and

as easily frightened by exposure of the advertiser's methods.

The campaign which the News is carrying on is sure to produce benefit in many ways. It will not fail to rid Denver of the advertising doctor. It will seriously affect the business of this unprofessional profession wherever the News is read. It will tarnish the reputation of every newspaper that continues to avow friendship with a business known to be dishonest.

In resisting this fatal onslaught, the advertisers hired a detective to visit the members of the State Board of Medical Examiners and solicit treatment for diseases which he did not have. The results of these consultations were to be published with the purpose of showing that those who had assisted in this attack were as conscienceless as those against whom it was directed. Just why the members of this board should be singled out for such a test is hard to understand, but they court the investigation. The advertisers should carry their inquiry into every doctor's office if they have the means and inclination to do so. Here is an opportunity for them to turn their ill-gotten resources to good purpose. If it can be shown that there are physicians in public office or in private work who encourage the conviction of illness in their patients or who give treatment for diseases which their patients do not have, let such physicians too fall under public condemnation.

There is still room for improvement in the advertising columns of the News. Reform, like charity, should begin at home. In justice to this paper it may be said that it has recently passed into new hands, and it may be that some advertisements are still published because of contracts which the present management has inherited from a preceding one.

The Denver Express has announced that after the expiration of its present

contracts it will publish no more medical advertisements of any kind. The one Denver paper which continues in alliance with dishonest medical practice will, unless its methods are changed, stand in conspicuous solitude. Its reputation will be tarnished and its business and influence greatly impaired by the convincing criticism and higher example of its more conscientious competitors.

THE SIXTIETH ANNIVERSARY OF EHRlich AND BEHRING.

Medical Germany has recently celebrated with great eclat the birthdays of two of its greatest luminaries, March 14, being the natal day of Paul Ehrlich, while Behring first saw the light March 15, 1854. Almost every medical journal in the fatherland has dedicated an issue in honor of the event, with contributions from former co-workers and pupils of these masters. Some of these articles are in the form of a Festschrift, embracing some special scientific labor. Others are reminiscences of the student and post-graduate days of the savants. One of the latter category, written by Prof. Salomonsen of Denmark, is of interest to American readers in that it gives an intimate description of our own Dr. William H. Welch, 'way back in 1887, in the University of Breslau, where Ehrlich, in Cohnheim's laboratory, made his earliest researches on the white blood corpuscles. His fellow students at that time made jest of the blue, yellow, green and red stains on Ehrlich's hands. They were the result of his initial experiments with aniline dyes. What wonderful problems in biology have since been solved with the chemistry of dye stuffs! It was this very idea of the affinity of special dyes for certain body cells or parts of cells from which thirty years later sprang the grand conception of chemotherapy—the consciously directed aim to produce

a chemical which shall have an affinity for the parasite and none for the host.

To the layman Ehrlich is known through his remedy for lues. While not the *therapia sterilisans magna* hoped for by its discoverer, nevertheless, it is the most potent spirilloicide we have at the present time. Yet even without this last achievement, Ehrlich's claim to celebrity are sufficient to ensure him a permanent seat in the Hall of Fame.

Besides his epoch-making work on the leucocytes of the blood, which has had but little revision since he first published it some thirty years ago, we may mention briefly his studies on the nature of antitoxins and the method of estimating their strength. Space does not permit extended comment on his epoch-making studies in immunity and his crowning labor, the "Side-Chain Theory," which has blazed a pathway for future investigators like the benzol ring of Kekulé or the periodic law of Mendeleyeff. His line of thought has always been along chemical lines, in which field he is a master, and he has aimed to transfer chemical reasoning into the biologic field. The impetus he gave to the chemistry of dye stuffs is fully recognized by chemists no less than his application of this knowledge to the staining of cells and tissues has earned the plaudits of biologists.

Evil Von Behring will always be known to posterity as the founder of serum therapy. As a worker in Koch's laboratory he astonished the scientific world with the announcement of his successful immunization of animals against diphtheria and tetanus. But there was a long struggle ahead to put his ideas into practice in the clinical field. The coldness of the profession toward him, the opposition of the hospitals who refused him opportunities to carry out his ideas, the final interest taken in his work by Prof. Heubner are interesting chapters in the early annals

of treatment by diphtheria antitoxin. Truth must prevail, and the efficacy of the new treatment in reducing mortality soon won Behring an enviable position. His later work in tuberculosis, while falling short of the hopes entertained by his admirers, nevertheless helped to establish the possibility of immunization of cattle against the white plague. Behring's most recent effort is on the lines of his first labors in the domain of diphtheria, it being this time an attempt to produce permanent immunization against the disease instead of the former brief period of immunity by a balanced combination of diphtheria toxin and antitoxin.

Science knows no boundaries of state or nationality. It is truly cosmopolitan. The services it renders are given to humanity at large. We in Colorado may, therefore, just as fittingly as our German confreres celebrate the sixtieth birthday of these two great masters.

THE SURGEON GENERAL'S LIBRARY.

Some time ago a "rider" on an appropriation bill was passed by the Senate which provided for the removal of the Surgeon General's Library to the Congressional Library and the discontinuance of the publication of the General Index. After some correspondence we are informed by the Hon. Edward T. Taylor, representative at large from Colorado, that he has been advised by Congressman Hay of Virginia, who has charge of the matter that "the transfer will not be made." We are greatly indebted to Mr. Taylor for the prompt manner in which he gave his attention to this matter and for his influence in blocking this objectionable measure. The Congressional Library has no room for the Surgeon General's Library, nor would its officers have the interest in it which has

the Surgeon General. This is a library in which the whole medical profession of this country take a deep interest. All the medical libraries in the country have affiliations with it and are able to supply information in short order from it to their members. We are glad to know that it is to remain where it is.

Original Articles

SUSPENSION LARYNGOSCOPY.*

LORENZO B. LOCKARD, M.D., F.A.C.S.
DENVER, COLO.

Since the year 1855, when Manuel Garcia succeeded in demonstrating the general utility of the laryngoscope, the aim of all throat surgeons has been the development of a universally applicable method of direct laryngoscopy: a desideratum recognized as essential to the complete mastery of the larynx and trachea.

The reflected or indirect image is usually sufficient, but in children and intolerant adults is inadequate even for diagnostic purposes, and in many instances where an image is obtainable the requisite operative procedures cannot be carried out. In infants and patients under the influence of an anesthetic the method is always absolutely impracticable.

Experience and operative dexterity can overcome much, but there are certain cases that baffle even the most skillful. Thus it is that laryngologists have constantly sought for a procedure which would make the larynx more accessible, and in every case, regardless of age and temperament, susceptible of prolonged examination and manipulation.

The first to take a step toward the solution of this problem was Kirstein, but autosecopy, as practised by him, was so

rarely successful that it was soon abandoned.

The work of Eicken and Gerber met the same fate and it remained for Gustav Killian, the master-mind of contemporary laryngology, to devise a generally applicable method, the so-called direct laryngoscopy and bronchoscopy.

Successful as this method is, it has certain inherent defects that leave much to be desired. A comprehensive view of the larynx, particularly of the anterior wall, cannot always be obtained even by those of exceptional skill and practise; the operative field is greatly restricted by the instruments employed; movements on the part of the patient throw the segment under examination out of the range of vision; and most important of all, only one of the operator's hands is free for manipulative work and it is exceedingly difficult to use this with the requisite delicacy.

The spatula, which draws forward the anterior wall of the larynx, requires such sustained force that some of this tension is unconsciously transmitted to the opposite arm. At least such is the experience of most operators.

Because of these disadvantages Killian worked for several years to evolve a more perfect method, and this we now have in "Suspension Laryngoscopy."

The general principle underlying this procedure was accidentally discovered.

In order to afford an artist a prolonged view of a throat, Killian attached the spatula, which he had been holding in the larynx, to a support above the table, and to his surprise found that the head remained firmly suspended.

The view thus obtained induced him to conduct further experiments on cadavers, and finally on the living, with the result which I show here today, and which is applicable to almost every case.

It offers the following advantages:

*Read at the Annual Meeting of the Colorado State Medical Society, Oct. 7, 8, 9, 1913.

1. A marvellous direct view of the palate, pharynx, tonsils, larynx, trachea and esophageal aditus, is obtained. These parts, instead of being contracted by instruments as in other methods of direct examination, are seemingly enlarged beyond the normal, and the various portions of the larynx can be studied with as much ease, and with as wide a field of vision, as is the pharynx under ordinary conditions.

2. Parts not visible with other methods are plainly seen and can be viewed from various angles.

3. A wide approach is afforded for operative procedures.

4. Trained assistants are not required.

5. The head is immovably fixed so the field of vision cannot be lost or altered.

6. The operator sits or kneels in a comfortable position and both hands are free for manipulative work. This is one of the most important advantages of this procedure, for it is conducive not alone to more rapid and thorough work, but to delicacy and exactness as well.

7. It is as easily applied to infants as to adults.

8. Operations can be clearly demonstrated to onlookers.

9. It may be used under either local or general anesthesia. In children and nervous adults general anesthesia is preferable, for the suspension, while it can be rendered painless, is exceedingly disagreeable.

10. Straight instruments of a size much larger than those commonly employed may be used.

11. The head is in such a position that the blood and mucus drain outward.

The method is not difficult to learn for one skilled in other methods of laryngoscopy, and a complete view may be obtained in practically every case, provided the instrument is properly introduced and adjusted. This naturally requires some considerable practice and judgment.

Owing to the annoyance occasioned by its introduction it can never replace the older methods for routine examinations and treatments; its province is in those patients where other procedures do not give satisfactory results, either for diagnosis or operation.

The following apparatus is required: An operating table, preferably some eighteen inches higher than those commonly used; a so-called gallows, and a hook-spatula with attached and adjustable tooth-plate. The gallows (Fig. 1)

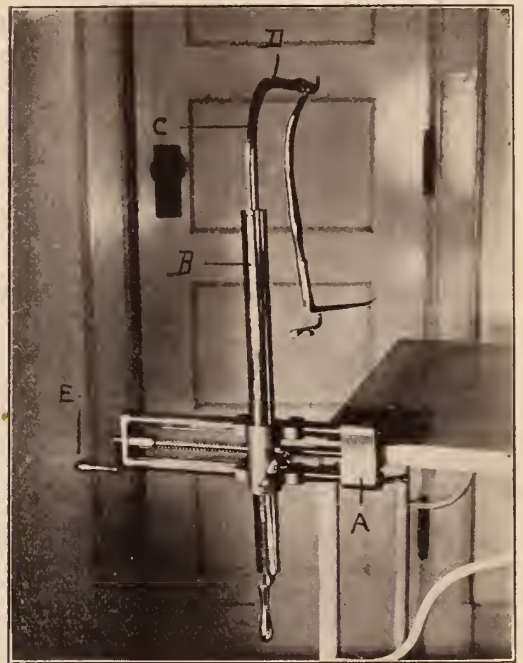


Fig. 1.

consists of a strong clamp (a) and a metal bar (b) set at right angles with the clamp, within which slides another bar (c) bent at its distal portion to a right angle (d). The bars may be moved by means of two cranks, (e) and (f) upward and downward, forward and backward.

This mechanism must work so smoothly that adjustments may be made without causing any jar or sudden movement.

The hook-spatula (Fig. 2) consists of

four parts: (a) the hook for attachment to gallows; (b) the handle; (c) the

ter pressure over the front of the neck, to bring the anterior commissure more clearly into view.

The spatula of the modified instrument carries a sliding bar to engage the epiglottis when the spatula fails to hold it in place.

Technic.

Children and neurotic adults should be given a general anesthetic, although the suspension can be made painless by the local use of cocaine.

Even when chloroform has been administered, the laryngeal and tracheal mucosa, if any operative procedures are to be employed, must be anesthetized in order to abolish reflexes.

A 20 per cent solution of cocaine or novocain is required for complete local anesthesia, and this must be applied to the epiglottis, larynx, palate and tongue, preferably preceded by morphin and scopolamin.

The patient is placed on his back with the head overhanging the end of the table, supported sufficiently to relieve all tension upon the muscles of the neck. With the head in full extension the introduction of the spatula, as in other methods of direct laryngoscopy, becomes exceedingly difficult.

The operator sits or kneels at the head of the table and utilizes either direct or reflected light; in the former case the lamp is attached near the distal end of the spatula.

When chloroform is used a mouth gag must be kept in place until the head is suspended; otherwise the procedure is the same as with local anesthesia.

The tongue is drawn forward with a napkin, and the spatula introduced, following down the posterior wall of the pharynx until the tip passes the epiglottis; the tooth-plate is engaged behind the upper incisors and the hook attached to the gallows. The tooth-plate is opened



Fig. 2.

tongue holder or spatula; and (d) the adjustable tooth-plate or mouth gag.

The mouth gag is regulated by a screw (s) set in the handle.

The hook-spatula, as shown, is the Killian model. There is a modification by Albrecht in which the hook is set parallel with the handle and almost on a line with the distal end of the spatula, thus conforming somewhat with the design utilized in the handles of Killian, Jackson and Bruenings. In Albrecht's hook-spatula there is an adjustable plate for coun-

until the proper width is attained, when the mouth gag is removed, the tongue freed and the head lowered until it hangs



Fig. 3.

in unassisted suspension, supported by the tissues attached to the hyoid bone and lower jaw. Figs. 3 and 4.

The view now obtained is usually so remarkable as to be actually startling to those seeing it for the first time. The pharynx, tonsils, esophageal aditus, sinus pyriformes and larynx are plainly seen, and the anterior commissure, the *bête noir* of laryngology, is brought plainly into view. If not, pressure over the thyroid will force it within the range of vision; it is for this purpose the counter pressure plate of Albreeht was designed. To me this seems an unnecessary complication of the instrument, as the hand accomplishes everything desired. In most cases the trachea is clearly seen—in many instances as far as the bifurcation.

The wide approach to the larynx enables one to see the various parts from

different angles, thus giving a more extensive and normal perspective. As with other methods of laryngoscopy, the physical peculiarities of the patient, so far as the conformation of the neck, jaws, and teeth is concerned, may render the examination difficult or easy. In some cases it is very hard to hold the epiglottis within the grasp of the instrument, and to meet this difficulty a sliding bar has sometimes been affixed in such wise that it can be pushed over the epiglottis while the end of the spatula is pressed into the valleculae at the base of the tongue.

In one case the author has experienced this difficulty and to the present time has been unable to overcome it; the only instance he knows in which the procedure has failed.

The patient, a man six feet in height, has a singularly long, thin neck, and the longest spatula made for the Killian instrument, an A 4, failed to reach the epiglottis, which is unusually rigid owing to



Fig. 4.

a healed tuberculosis. A special spatula, one-half inch longer than the A 4, entered the larynx but failed to hold the epiglottis within its grasp.

The end of the spatula was then fenestrated in the belief that it might prevent it from slipping, but without success.

A sliding bar attachment has also failed. Each time all goes well until the arytenoid cartilages are brought into view, when any attempt to regulate the instrument forces the epiglottis free.

Some ten futile attempts have been made. It is hoped that the Albrecht instrument, which has not yet been received, will overcome this obstacle.

In all other cases it has been brilliantly successful. That it is not the severe procedure which the formidable appearance of the apparatus would indicate, is proved by the comparatively long time one can be suspended without protest.

In one instance Killian suspended a case for over an hour, and at another time demonstrated a patient to 120 persons. I have several times operated tuberculous patients who had previously been operated by the indirect method, and have demonstrated the condition, before and after, to others, and have had them state that the discomfort occasioned was not much greater than that experienced with the older methods, although the period of suspension was considerably longer than would ordinarily be required.

It is certainly not sufficiently severe to interfere with its use whenever indicated for the purpose of diagnosis, and I believe that when operative work is to be done it will prove nearly always to be the preferable and accepted procedure.

In the light of present experience one has ample warrant for the prediction that the introduction of the suspension laryngoscope will form one of the notable milestones in the history of laryngology.

DISCUSSION.

T. E. Carwmody, Denver: Since Dr. Lockard received the instrument which he has shown you, I have used it a number of times and with very marked success. The longest I have had a patient suspended is half an hour. One tuberculous patient from whose larynx I removed some cicatricial tissue, was suspended at one time for twenty minutes, and at another time for half an hour. Both of these operations were performed under a local anesthetic. The patient complained very little of annoyance from the apparatus. At one time I gave morphine and atropine before suspending her and had no trouble. On the other occasion I simply used cocaine, and the patient struggled and complained considerable.

In other cases I have had no particular trouble as they were all under the influence of a general anesthetic.

Robert Levy, Denver: It is remarkable how easy this method of examination becomes after one has used it only a few times, and I think in that respect it far exceeds any of the ordinary methods of direct laryngoscopy such as we have been using heretofore.

However, under local anesthesia we will find every now and then that patients not only resist the introduction of the instrument but resent any attempt to prolong the examination.

My first experience with this instrument was a tracheotomous patient. I discovered that in these cases there was for some reason or other a great deal more difficulty, contrary to what we might expect, in making a satisfactory examination. Then my next experience was in children under general anesthesia, and that was so delightful an experience that I was immediately converted. My first case was that of a foreign body in the upper third of the esophagus that had lodged above a stricture. A three-year-old child gave a history of having had a stricture for many years, following the swallowing of a corrosive, and there was a very definite history of stricture of the esophagus. There was no greater interference with the swelling than usual until within a week or ten days from the time that I saw the child, at this time the difficulty became worse suddenly evidently due to some sort of foreign body that had lodged above the stricture. The suspension apparatus was used for the examination of the upper third of the esophagus. We did not succeed in finding the foreign body by means of this instrument, but we did succeed in exploring the upper part of the esophagus pretty thoroughly. The foreign body was lower down than we could determine with this instrument.

The next case was that of a child with multiple papilloma of the larynx that had been tracheotomized during an attempt to remove this papilloma by the direct method. In using the ordinary method the child became apnoeic.

Rapid tracheotomy on the table was necessary. That suspended operations by that method. Later we used the suspension apparatus, and it was a perfect delight, as Dr. Lockard has stated, to view this larynx. The child remained under the anesthetic for a long time, requiring but very little anesthetic, through the tracheotomy tube, and I think we demonstrated the interior of the larynx with this method to a dozen men who happened into the operating room at the time. These papillomata were readily removed by the Cordes straight forceps. It was a very great comfort to be able to use both of your hands and have the patient lie there perfectly quiet, with every portion of the field of operation before you, using one hand to sponge, the other hand for your operation, requiring no other assistance, and making the procedure extremely comfortable, contrary to the usual method.

In an attempt to remove the papillomata from the anterior we were obliged to make pressure upon the thyroid cartilage. I have not seen the Albrecht instrument, but I believe, as Dr. Lockard has stated, that it is hardly necessary to have any very extensive apparatus for this purpose when an assistant can by a little pressure upon the thyroid cartilage bring every portion of the anterior portion of the larynx into view.

I found that it was not necessary to draw the patient's head far over the table. The idea that has been gathered is that the patient's head must hang well over and below the table. It has not been necessary in my experience to do this. The patient can lie on the table with the head but very slightly extended beyond the table, at the same time that a small pillow raises the shoulders.

I am very much interested in the case that Dr. Lockard reports of inability to view the larynx by means of the long spatula. That is certainly as long a spatula as I have ever seen attempted in any intralaryngeal manipulation. It occurs to me that the difficulty, from what Dr. Lockard has said to me, lies in the fact that the epiglottis insists upon slipping over the spatula. By using the Horsford needle and suture the epiglottis can be brought under our control and thus held under the spatula, even though the spatula itself may not be sufficient.

Lorenzo B. Lockard, Denver: The question has been asked whether any special instruments are required for use with the suspension laryngoscope. Personally I simply took all of my old instruments and had them straightened. There are some special instruments made, but I think the ordinary ones, straightened, are all that are required.

In regard to this case of failure; if it had been a case where operative procedures had been required we could have overcome the difficulty, as Dr. Levy suggests, either by passing a suture through the epiglottis or by amputating it, which would be justifiable under such conditions. This is a case, however, that has been under treatment for some time, and I was simply seeking a better view of the larynx than it was possible to get with other methods, so I naturally hesitated to take any

steps that would occasion particular discomfort.

THE BACTERIOLOGY OF ACUTE RHEUMATISM.*

BY ROSCOE C. BAKER, A.B., M.D., DENVER.

Acute articular rheumatism is now generally regarded as an infectious disease, but there is still considerable discussion as to its etiological agent.

In 1898 Triboulet and Apert found a diplococcus in twelve cases of acute rheumatism. In the following year Wassermann isolated a diplococcus from the brain, blood and heart valves of a case of chorea following acute rheumatism. He injected this organism into eighty rabbits, and in them produced fever and multiple arthritis. This organism grew as a diplococcus in the tissues, but on cultures as a streptococcus.

In 1900, in eight successive cases of acute rheumatism Poynton and Paine found a diplococcus similar to that described by Triboulet and Wassermann; and since that time they have increased the number of their cases from eight to nearly one hundred, with only occasional failures. They give the chief characteristics of this organism as follows: It is a small micrococcus, 0.5 micron in diameter, and usually grows in pairs or in short chains. It stains readily with the ordinary anilin dyes, and is Gram-positive. Poynton and Paine called it the diplococcus rheumaticus, or to use a family name, the streptococcus rheumaticus. At one time or another they have demonstrated this diplococcus in the synovial tissues and synovial fluid from a joint, the endocardial and pericardial tissues, the blood, pericardial fluid, tonsils, nodules, lungs, pleura, peritoneum, urine,

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brain, pia mater and cerebrospinal fluid of cases of acute rheumatism. They, however, emphasize the fact that this diplococcus is not to be found in the circulating blood, nor in the joint effusions of ordinary cases of acute rheumatism, but only in the very severe and fatal cases can it be recovered. Rabbits inoculated intravenously with this organism by them showed lesions similar to those seen in man, viz.: arthritis, endocarditis, myocarditis, pericarditis, pleurisy, nodule formation, choreiform movements, visceral infarcts, bursitis and tenosynovitis; and the diplococcus was again recovered from the various lesions of these rabbits. They conclude that there is but one exciting cause of acute rheumatism, variously called a diplococcus, streptococcus or micrococcus.

Beaton and Walker confirmed the work of Poynton and Paine, and in 1903 reported fifteen cases of acute rheumatism, chorea and malignant endocarditis in which they discovered the diplococcus rheumaticus. Cultures were obtained from the blood, taken during life or at autopsy, or from the urine, and once from an articular exudation during life. By intravenous inoculation into rabbits they produced acute septicemia, pericarditis, endocarditis, pleurisy and arthritis; and they again recovered the diplococcus from all the lesions, the blood and the urine of the inoculated animals. They conclude that the diplococcus rheumaticus is most probably the specific cause of acute rheumatism.

Shaw, in the same year, 1903, obtained pure cultures of the diplococcus rheumaticus from Wassermann, Poynton and Walker, and, by inoculation into rabbits, produced arthritis, endocarditis, pericarditis and visceral infarcts with each culture. In two rabbits he observed iritis, and in one rabbit was able to obtain a pure culture of the diplococcus rheumati-

cus from the anterior chamber of the eye. He inoculated a monkey with the diplococcus received from Poynton, and it produced arthritis, endocarditis, myocarditis and pericarditis. The monkey exhibited, during his fatal illness, phenomena which were in every way similar to those of acute rheumatism in man. The work of Poynton and Paine has been confirmed by many other investigators, whose experiments I have not time to describe in this short paper.

Cole, in 1904, isolated six strains of streptococci from cases other than acute rheumatism, as follows: From peritonitis following carcinoma of the stomach; puerperal fever autopsy; blood during life in a terminal septicemia following myocarditis; empyema; blood during life in septicemia following appendicitis; and scarlet fever adenitis. Rabbits inoculated with these streptococci caused arthritis in every case, and in two rabbits a true endocarditis was produced. He concludes that arthritis and endocarditis may be produced by the intravenous inoculation of rabbits with streptococci from various sources, and the results obtained are quite similar to those described as resulting from the so-called diplococcus rheumaticus. Therefore a description of a distinct variety of streptococcus, based on its property of producing arthritis and endocarditis, is unwarranted. These results of Cole will be explained by the work of Rosenow, which I will now describe.

During last year, Rosenow of Chicago obtained positive cultures from the joint fluid of fourteen out of sixteen cases of acute rheumatism. The two cases in which he failed were convalescent and fever-free when the cultures were made. He inoculated the joint fluid into tubes containing tall columns of ascites-dextrose-agar, the top of which gives aerobic conditions, while the bottom gives anaë-

robic conditions, the space between representing a gradual transition from one condition to the other. The oxygen requirement, he claims, is the chief factor to explain the difference in his results and the negative results of others. Colonies never developed above 0.5 cm. from the top and never below 2 cm. from the bottom. The largest number developed between 1.5 cm. from the top and 3.5 cm. from the bottom. These fourteen positive cultures showed three types of organisms. Two types, one a very long chain producer, the other resembling a micrococcus, were obtained from cases in which no muscle involvement was present. When injected into animals as isolated, they produced arthritis, endocarditis and pericarditis, but not usually a visible myocarditis, and never a myositis. The third type, a diplococcus with short chains of diplococci, was obtained from cases of rheumatism in which definite muscular involvement was present. It also produced arthritis, endocarditis, and pericarditis, but especially marked endocarditis and myositis. All three forms are comparatively of low virulence, and can be converted from one into another.

In a series of experiments Rosenow has been able to convert typical hemolytic streptococci into typical pneumococci and vice versa. In transposing them there are formed intermediate stages and intermediate organisms varying in virulence and cultural characteristics, and as the virulence and cultural characteristics vary, there results a variation in the affinity or selective action for different tissues. For instance, he starts with a hemolytic streptococcus which has an affinity for the joints. He increases its virulence, and it takes on cultural and other characteristics resembling the streptococcus rheumaticus. He increases the virulence of this organism, and it changes into a streptococcus viridans,

which when injected into animals produces a typical endocarditis similar to that produced by the organism isolated from a case of chronic septic endocarditis and as he increases the virulence of this organism it takes on the characteristics of a pneumococcus.

Rosenow increased or decreased the virulence of these organisms by various means, such as cultivation on artificial media, passage through animals, varying the salt concentration, varying the oxygen tension, and by symbiosis with other organisms. He has converted three strains of streptococci from rheumatism cases into typical pneumococci on the one hand, and into typical hemolytic streptococci on the other hand. When the rheumatic strains have acquired the cultural features of hemolytic streptococci they lose their affinity for the endocardium and pericardium and acquire an even greater affinity for the joints. When they have become converted into pneumococci of a certain grade of virulence, pulmonary hemorrhage and pneumonia are commonly found after intravenous injection, whereas when the virulence is still greater, death from pneumococcic septicemia results. The strains from muscular rheumatism, especially after one or two animal passages, show a marked affinity for the mucous membrane of the stomach, the pelvic mucous membrane, the medullary portion of the kidney and the gall bladder; and ulcer of the stomach, the picture of an ascending nephritis, and cholecystitis with beginning formation of gall stones, caused by streptococci, have been found repeatedly by Rosenow in rabbits and dogs injected with these strains. Muscle lesions have been produced in numerous rabbits, dogs and one monkey. The character of the lesions is similar in all. These lesions have been obtained with four strains isolated from the joints in cases of rheumatism, in which muscu-

lar involvement was present, with a strain from articular rheumatism, after having been modified, and with six strains of non-virulent streptococci, after they were made to correspond morphologically, culturally and in virulence with the strains from muscular and articular rheumatism in man. The localization in the muscle of the non-virulent strain occurred only after from twelve to twenty-one animal passages.

In the above experiments Rosenow has shown that he can change hemolytic streptococci into pneumococci and vice versa, and during the transitional stages a variety of streptococci is produced which will by inoculation into animals cause all the main types of lesions met with in cases of rheumatism in man. In this variety of streptococci there are different strains which can be changed from one to another.

Branson, in 1912, in an article on avenues of rheumatic infection, says that rheumatism and chorea are but different signals of the same disease, and reports a series of seventy-five cases of chorea in which eighty-eight per cent showed disease of the naso-pharynx. Rosenow states that the focus of infection in acute rheumatism is most often in the oral cavity—from the tonsil, pyorrhea, or blind abscesses about the teeth—or in the accessory sinuses of the nose, but the intestinal tract and prostate are undoubtedly frequently the source of infection.

CONCLUSIONS.

Clinical evidence and animal experiments point to the fact that acute rheumatism is due to streptococci which have special characteristics. They are in a class between the hemolytic streptococci and the pneumococci, and appear as micrococci, as diplococci, or in chains at various times. Streptococci are present in various septic foci of the body, chiefly in the tonsils and accessory sinuses of

the nose, also in the gums, intestinal tract, and prostate in some instances. In these septic foci it is reasonable to suppose that their virulence is changed by symbiosis with other organisms and by a lowered oxygen tension and that they filter into the general circulation and produce acute rheumatism, the resulting type of disease depending on the resistance of the patient on the one hand, and the virulence of the streptococci and the number of them thrown into the circulation on the other hand.

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EYE LESIONS RESULTING FROM "AUTO-INTOXICATION."*

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Great difference of opinion exists between observers in their conception of "auto-intoxication." Many theories and few definite facts have been established. The word itself is attacked by no less an authority than the famous Von Noorden. He claims that scarcely another term in medicine is so frequently misused as the word "auto-intoxication," and then adds that the term has an unpleasant sound in scientific medicine. We are accused of adopting it as a fine-sounding term to ex-

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plain pathologic changes when insufficient investigations have been made, an excuse for indefinite diagnosis, a new diathesis around which to twirl our imagination. Carl Von Noorden does not stop here, he attacks the theories of the enthusiastic Bouchard, the work of the great Albu and the scientific system of Combe of Lauscarne, and even our friend Metchnikoff, who would so neutralize our intestinal bacteria with the development of a harmless type, to extend our mundane existence into many future years. The noble surgeon of Guy's Hospital, Sir Arbuthnot Lane, claiming numerous symptoms and diverse affections arise from this condition, invites them all to direct their fire towards his bulwarks. Genius must be stoned, it seems. It always has been and always will be thus. Ben Johnson said, "Shakespeare talked heavily and without any wit." Notwithstanding all this, I have rushed in where better men hesitate to go because I am not a genius, therefore I may escape the stones, at least those of large size. Will you pardon my boldness?

Let us see what we can find in the way of a concise definition. The one given by Wood under "auto-intoxication" seems to cover it broadly in a few words: "A self-poisoning in consequence of the absorption of noxious products of a defective or disturbed metabolism." Albu gives the following: "Auto-intoxication is a poisoning of the organism by the products of its own metabolism, which may be normal, but accumulated in excessive quantities, or they may be abnormal. Among the latter it may be necessary to distinguish between those which are subject to further transposition and those which are formed not at all or only in slight degree in the healthy organism." Von Jaksch's auto-toxicosis is that condition "Wherein toxic substances are developed within the body from normal or pathological prod-

ucts, which in themselves are not toxic, and wherein normal or toxic physiological products are formed in a certain portion of the body in such large numbers that the toxic symptoms appear in spite of the continuous excretions of such bodies."

It must, no doubt, appear to us all that the word "auto-intoxication" has a fixed and definite place in our nomenclature; that it embraces a vast array of gastrointestinal disturbances and pathological changes resulting from the disordered condition of our metabolism.

I believe the condition to be much more frequent than is usually conceded by the profession. It may arise from digestive disturbances resulting from changes in the gastrointestinal mucosa, from retention of food products, from impaired motility, abnormal germ growth and fermentation of animal food in the intestine. Probably the most frequent disturbances of the normal physiological processes result from the failure of the organism to rightly and regularly eliminate the waste toxic substances. This is only part of "auto-toxemia." Perversions of the internal secretions from the thymus, thyroid, adrenals, sexual glands, decreased function of an organ, etc., giving rise to pathological changes, all come under the heading of "auto-intoxication."

Let me here quote De Schweinitz, giving the classification of Albu, "(1) Auto-intoxication caused by loss of function of an organ, e. g. myxedema, pancreatic diabetes, Addison's disease, acute yellow atrophy of the liver; (2) auto-intoxication due to general abnormalities of metabolism, e. g., gout, oxaluria, etc.; (3) auto-intoxication from retention of physiologic products of metabolism in various organs of the body, e. g., toxic phenomena after extensive burns, carbonic acid poisoning in difficult respiration, uremia, etc.; (4) auto-intoxication caused by over production of physiologic and pathologic prod-

ucts of the organism, e. g., acetoneuria, coma of diabetes, etc." To group three or four, or both, belong the great majority of "auto-intoxications" coming from the gastro-intestinal tract. Von Noorden would cast most of this aside. He would reject completely the term intestinal "auto-intoxication" with the exception of certain conditions that occur in the gastro-intestinal tract of infants. "One may speak intelligently of auto-intoxication only when the poisons are formed by the tissues of the body itself, or in other words, when the so-called endogenous poisons are concerned." Thus writes the brilliant Von Noorden, and yet he admits that our knowledge is very much limited concerning the chemistry of the poisons having their origin in the gastro-intestinal tract.

It is not my intention, in this brief effort, to discuss "auto-intoxication" as a whole in relation to eye changes, but only to consider those which seem to come directly from an endogenous toxemia generated within the alimentary tract.

Before going into the eye changes, let us look into the symptomology. Allowing the assumption that these ocular changes are a result of enterogenous fermentation and decay in the intestinal tract, we should have symptoms which would make our diagnosis more positive. In 1905 Elschmig gave as the most definite symptom the abnormal organic compounds found in the urine. Of these, the most readily found is indican, which Jaffe proved, as far back as 1872, to be formed from indol, a substance generated in the lower part of the small intestine. Indol is formed by bacterial decomposition of proteids. If the patient is placed on a farinaceous and sugar diet the indicanuria production in the urine will cease. Indol and skatol are formed from prolonged pancreatic digestion and tryptophan in the presence of putrefaction. It has been estimated that from .005 to 0.015 of indol

are normal for a twenty-four hours quantity of urine. The variation is more important than the actual quantity unless the quantity is greatly in excess of the normal.

Elschnig has found in 40 per cent of the cases of iridocyclitis, where no other cause could be demonstrated, an increased quantity of indican in the urine. Recently the same authority (*A Study of Sympathetic Ophthalmia* — Elschmig, translated by Gradle) gave a report on thirty-eight cases of iridocyclitis of apparently non-leucic and non-tubercular origin. Nine of these could be attributed to other etiological causes, namely: gonorrhoea with albuminuria, disseminated posterior sclerosis, arthritis urica, carcinoma of the stomach, rheumatism and mitral insufficiency, albuminuria and chronic nephritis. Of the 29 cases remaining there was no definite etiological factor, unless we admit the "auto-intoxication" entity. Sixteen of these cases showed increased excretion of indican, one of the cases was combined with albuminuria, one with mitral insufficiency, two with empyemia of the accessory sinuses, three with rheumatism, and one alternating albuminuria and indicanuria. Disturbance in the intestinal tract was proven in all of these cases, and Elschmig states definitely that "These cases stand in close relationship to auto-intoxication from the gastro-intestinal tract." Of the thirteen remaining cases proof of the causative factor could not be found because of the patients leaving the clinic, etc. Referring to the above thirty-eight cases, Elschmig adds: "Since nothing pointed to the general systemic infection, the dearly beloved phrase 'endogenous bacterial infection' could not be applied to these cases."

It is interesting to note some of the opinions and findings of men who are controverting the views and conclusions of Elschmig. Hippel does not agree that

sympathetic ophthalmia is in part caused by "auto-intoxication" nor chronic iridocyclitis, and goes farther with the statement that indican in the urine is not important in diseases of the eye or is it pathognomonic of gastro-intestinal toxemia. His conclusions for the above were strengthened by the examination of 416 cases of various forms of eye diseases, which gave less than 4 per cent showing the abnormal quantity of indican. In 308 cases examined by Bernheimer for indican in the urine, in a variety of eye conditions, only about 10 per cent gave positive findings. Of this number 47 cases of retrobulbar neuritis gave 5 positive results; 34 cases of iridocyclitis also gave five. Stuelp examined 1,000 cases, divided generally over the various forms of eye disease, including those which Elschnig attributed to "auto-intoxication" and others for which no such etiology has been claimed. In only 8 per cent of the cases did he find the indican in the urine greatly increased over the normal. He also made 50 examinations of other patients, who were free from pathological changes in the eyes, and obtained practically the same percentage of positive results as in the examinations made in the eye cases.

Whether these abnormal organic compounds found in the urine in these particular eye disease are or are not pathognomonic of intestinal toxemia does not alter the opinion of most of us, that "auto-intoxication" is a condition which we daily meet. We can recognize an "auto-toxic" symptom complex, which can be differentiated and diagnosed by exclusion. One can look over the various forms of uveitis that have been a nightmare to each one of us for days, weeks and months. Our symptoms of syphilis are absent. Our reactions negative. We hesitate today to give them the vague term diathesis for the days of empiricism are fast becoming a thing of the past, and we come to light

at last, even though many able conservative observers will not agree that "auto-intoxication" is an entity and the cause of many eye diseases, which were formerly classed as idiopathic.

That "auto-intoxication" as an etiological factor direct, or a prominent contributing cause in uveal diseases, particularly the chronic iridocyclitis with vitreous opacities and deposits on the posterior surface of the cornea and the recurrent or relapsing iritis is strongly held by Elschnig. Punctate keratitis, chronic choroidal changes, plastic choroditis of the recurring type can be traced in many cases to disturbance in the intestinal tract. It is interesting to give the history of a very severe case of uveitis that came to my attention December 18th, 1911. It first appeared as a mild episcleritis which occasioned considerable photophobia and discomfort. Under local treatment and general dietary measures, the patient progressed rapidly to what I thought was a permanent cure. On January 12th, she left the hospital apparently in good condition, only to return on January 20, 1912, with a most marked exacerbation of the same condition. From that time on trouble began. She rapidly developed a very severe uveitis. Deposits appeared in the anterior chamber, the vitreous showed web-like opacities, extensive hypopyon formed simultaneously in both eyes. The cornea seemed to develop exudate between its layers and ulcers formed at the corneal margin. For a number of weeks I thought I had a permanently blind woman on my hands. The patient was a woman twenty-four years of age, well developed, of sedentary life owing to her occupation. Her family history was excellent, four brothers and two sisters living and well; mother died at 52 of pneumonia; father in good health at 62. Her personal history showed minor diseases of childhood, her general health being par

excellent, until two years previous, when she was supposed to have peritonitis. From that time on, she was constipated to a marked degree, for the relief of which she took purgatives in the form of pills. General examination at the time revealed nothing but slight tenderness over the ileum and sigmoid with displaced uterus. A blood count showed little below the normal for the red cells with a color index of 90. Wassermann was negative but Von Pirquets was strongly positive. The urine showed traces of albumin and reacted strongly for indican. Her mental condition showed a marked degree of depression, her hands were cold and clammy, the skin was pale and waxy, constant headaches, low blood pressure, etc. I felt that the case was one of toxemia; if she was tubercular, that the tuberculosis was secondary. She remained in St. Mary's hospital from January 20, 1912, to March 30, 1912. Several times the improvement was distinct and each time a relapse occurred. I was satisfied in my own mind that the case was one of intestinal stasis. Probably adhesions, an adherent appendix, a Lane's kink, or the much talked of membrane of Jackson. Something was radically wrong with her general metabolism. I advised an exploratory incision, to which the patient agreed. A very large adherent appendix was found with a peritoneum which was pronounced tubercular. No microscopic examination was made. From that time the patient made a rapid recovery, and has been well up to the present time. If the appendix and peritoneum were tubercular, I believe they were secondary to an intestinal poisoning from the constipation brought on by the sedentary habits of the patient.

Kindly permit me time to relate an excellent example of Elsheinig's second variety of uveal tract disease, namely the relapsing or recurrent iritis, which he

considers usually occurs in patients of apparent health. This patient, Mrs. G. W. R., age 20, presented herself at my office on December 4th, 1910, having been referred by Dr. J. A. Black. Family history was negative. Patient was married at 18, never having been pregnant. General appearance was that of a well nourished, healthy woman of good weight. She gave a history of her early childhood that may have been adenitis of the submaxillary and cervical glands. She also had diphtheria and measles. No history of gastro-intestinal disturbance, with the exception of obstinate constipation, for the relief of which condition she was in the habit of taking patent pills. She was subject to frequent headaches, mild form of polyneuritis and insomnia. Status praesens: Vision O. D. fingers at 5 feet, O. S. 20-20. Right eye was markedly injected, some edema of lid, pain and tenderness on pressure, the characteristic deposits on the posterior surface of the cornea, aqueous cloudy, few opacities in the vitreous, posterior synechia almost to the extent of a seclusio pupillae. The left eye was apparently free from the acute inflammatory condition. It showed under atropine the synechial remnants of former trouble in the left eye. Over a period of two years, she had suffered numerous attacks, mostly confined to the right eye, but recently the left eye began to be involved. I advised her to go to the hospital, but, as she lived in a distant town, she preferred to follow, as best she could, the line of treatment I prescribed and to return to her home. The patient again consulted me on January 14th, 1911, with both eyes inflamed, this time the left, her good eye, was the greater offender. She reported much improvement after the first course of treatment, but said "The medicine had run out of strength," and was willing to follow my advice as to going to the hospital, where, after eight

days of baths, regulated diet, calomel in divided doses, inunctions of mercury and high enemas, she was apparently as well as ever. Wassermann was negative, blood examination almost normal, urine showed slight trace of albumen, no sugar, no casts and strong indican reaction according to Obermayer's formula. Vision at this time was O. D. 20-70, O. S. 20-20. On January 22, 1911, the patient left for home, feeling that she was cured, notwithstanding my caution to the contrary. She returned again on April 27, 1911, and remained in the hospital until May 10, 1911, re-entering the hospital June 22, 1911, and remaining until July 4, 1911, returning again to the hospital on August 24, 1911. By this time I was readily willing and anxious to have her go to anyone or anywhere. I had gone the limit and tried every means of getting her gastro-intestinal tract to better follow its normal physiological function. I believed I had an endogenous toxemia, but how to remedy it? On this visit, after a careful review of her general symptoms, she mentioned having had a slight uneasiness in the region of McBurney's point. I referred her to Dr. Black for an abdominal examination. His report was slight tenderness over the appendix. I suggested appendectomy without promise of relief. The patient and her husband agreed to take a chance on the operation, which was performed at St. Mary's hospital, where I was criticised for forcing the common surgical fad. Mrs. R. made an uninterrupted recovery, returned home at the end of the third week, and to this day has been well and free from any other eye changes.

Another interesting case was a Mrs. B., about 35 years of age, married about ten years, good family history as I remember, and the mother of two healthy children. Before her marriage she was a hard-working milliner and had had indifferent

health since 18 years of age. She was a woman of poor color, not well nourished and subject to chronic constipation. She came to me with extensive vitreous opacities, almost imperceptible deposits on the cornea and the iris slightly involved. During the course of a year of perfect care and treatment, the eye cleared, giving 20/40 vision. The retina and choroid were both implicated in the inflammation. These changes were not detected until the eye cleared. If she relaxes with her general care, she immediately notices a change for the worse. The patient apparently has a good-sized fibroid, the removal of which, I am satisfied, would cure her "auto-intoxication."

It is held by De Schweinitz, Fromaget and others that our post-operative delirium and insanities have their origin not so much in the eyes being bandaged, the atropine or fear of permanent inability to regain comfortable vision, or predisposition to enfeebled mentality, as, in many cases, to some hidden toxemia. Elsheinig has long held the view that often a post-operative iridocyclitis has been caused by disturbances in the alimentary tract, either from reflex or intestinal absorption. He considers it a causative factor also in glaucoma following cataract operation. De Schweinitz cites a case of this character: "On the morning of the sixth day, after a perfectly normal extraction without complications of any sort, pain began, followed rapidly by rising intra-ocular tension, and, in short, an attack of glaucoma. In the preceding 24 hours, the urine, which had been normal in quantity and which contained no albumin, although an occasional cast, fell to 18 ounces, also there were stubborn constipation and other indications of gastro-intestinal disturbance. With the relief of these symptoms and the restoration of the urine to the normal amount, associated with myotics locally, the entire attack subsided,

to be repeated twice afterwards, in, however, much milder degree, again with a return of all of the symptoms, in so far as the urine and intestinal tract are concerned, which have just been described. The ultimate result was a brilliant cure, with vision with correcting lenses of fully normal degree. It will at least be admitted that a gastro-intestinal intoxication may have been responsible for this complication, although it is not proved."

Forms of scleritis, keratitis and ulceration of the cornea, particularly the relapsing marginal variety are attributed to absorption of toxins from the intestinal tract. I recall one case in particular; a robust farmer, who had three recurrences of marginal ulceration, local treatments for which condition helped only for the time being. Permanent results were attained only after proper dietary measures and careful attention to the regulation of the bowels.

Someone has truly said "There's nothing new under the sun." This phrase strongly appeals to me at the present time, because I was prompted to write this paper through my belief in the possibility of "auto-intoxication" from the intestinal tract having much to do with the development of the so-called toxic amblyopias. In the different text books to which I referred, I found no mention of such a probable causative factor, hence my delusion. In Norris and Oliver, page 803, Vol. 4, De Schweinitz points to the possibility that the active principles of tobacco freely present in the smoke exhibits some toxic influence on the general system, which gives a species of "auto-intoxication." Particularly does this hypothesis appeal to me because the amblyopia occurs in those in whom the general resistance is especially below par; for example, cases of chronic gastric and intestinal changes, heart lesions and nephritis. I have never seen a case of toxic amblyo-

pia from tobacco or alcohol which occurred in a perfectly healthy individual. I have had two cases where the internist could not demonstrate any causative lesion, but both cases were under weight, nervous, and one had a pulse of 120. I am not including here the amblyopias caused by direct toxic effect; for example, wood alcohol, iodoform, nitrobenzol and the like, nor do I include those of direct poisoning by nonusers of alcohol or tobacco, for example, where amblyopia occurred after application of tobacco to a tooth cavity, a case reported by Kosminsky.

De Schweinitz and Edsall reported the urinary findings of seven cases of tobacco-alcohol amblyopia with the following results: "Case 1. High increase for conjugate sulphates, temporary intense indicanuria and slight urobilinuria. Case 2. Intense urobilinuria. Case 3. Moderate urobilinuria and high volatile fatty acids. Case 4. Moderate urobilinuria, marked indicanuria, decided reaction for phenol and high volatile fatty acids. Case 5. Intense indicanuria, moderate increase of conjugate sulphates, marked urobilinuria. Case 6. Intense urobilinuria and indicanuria and intense phenol reaction. Case 7. Marked reaction for phenol and notably high values for volatile fatty acids with slight urobilinuria."

At the same time a case of optic atrophy was used as a control, the urinary findings of which showed only the normal quantity of indican. The atrophy was not caused by alcohol or tobacco. Considering the large percentage of the population who are addicted to the use of alcohol and tobacco, it seems reasonable to conclude that some perversion of the normal metabolism is necessary to give rise to these particular cases of blindness.

We are not in a position to offer much on the palsies of the external muscles. All other possible causes should be ex-

cluded before considering "auto-intoxication" as an etiological factor. The muscles of accommodation, however, are affected by exogenous toxins and also, I believe, not infrequently by a toxemia generated within the intestinal tract. I had a case of paresis of the accommodation under my care some two years ago, which I considered to be "auto-toxic" in origin, a strong, healthy man of 28, with a negative Wassermann and clear history. During a period of eight months he had at intervals a paresis of the right eye. On one occasion it lasted six weeks. He was suffering with slight pain over the appendix and chronic constipation. The urine was negative. He was operated in Chicago for appendicitis. I saw him six months later. His paresis had vanished and up to that time he had experienced no further difficulty.

The treatment of these conditions should be local and constitutional; the latter must be pushed to the utmost to get the best results. The diet should receive special attention; rest, fresh air and good water should be prescribed. The bowels should be kept freely open, for which I use calomel in divided doses, and in urgent cases, enemas.

I never use intestinal antiseptics. I believe guaiacol carbonate, salol, beta-naphthol, resorcin, creosote and similar so-called intestinal antiseptics to be of no value in these conditions. They can only do harm. In obstinate cases, where permanent relief cannot be obtained by these measures, it is well to look into the abdominal aspects of the patient, and, if necessary, resort to laparotomy to remove any possible mechanical obstructions interfering with digestion or causing harmful reflex disturbances.

Let me add, in conclusion, a fact which is already recognized, that it has not been my desire to present here a broad, exhaustive, scientific paper on a subject so

far-reaching and concerning which there is such diversity of opinion and so little definitely known. The subject of "auto-intoxication" is one of great complexity, which can stand much reiteration. It is generally accepted that we deal constantly with such toxemias, whether we study their symptomology relative to some particular part, or to the whole organism; whether we look to a disturbed condition of the alimentary tract, to a disordered liver or to a perverted internal secretion. All are disorganized functions associated with and often having their origin from the abnormal formation of these chemical poisons. Purgation to bring about the elimination of such poisons was the first procedure in primitive medicine. The castor-oil habit, the chosen method of our grandparents, and the empirical use of calomel, brought down from the beloved physician of old, were all used to bring about the same end, namely, the promotion of normal functions by the elimination of the body poisons. Everywhere do we find evidence of the destroying power of "auto-intoxication," whether we consider the gastro-intestinal toxemia of infants or the arteriosclerosis of the aged.

Scientific investigation and accurate experiments are necessary to verify our present theories, to explain the pathologic changes in distant organs of the body, to show more clearly the reactions which occur between enzymes and toxins, whether alkaloids, glucosides or ptomaines are formed, or some other chemical substance, which holds this peculiar affinity for some particular cell. We must ascertain what part they play in the etiology and understand better the pathogeny of these acute and chronic disturbances. The whole subject calls for more detailed study, and only when physiological and pathological analysis demonstrates the causes and ultimate results of intestinal "auto-intoxication," will we be better able

to recognize these morbid changes as definite clinical entities.

Pueblo, Colo.

DISCUSSION.

Melville Black, Denver: Dr. Magruder was to have opened this discussion, but he is modest enough to say that he does not know anything about autointoxication; I am sure I do not. I once thought I did; but the more I study this question, the more I am impressed with the fact that I am more up in the air than ever. There is something in these cases in the nature of a toxemia from within. We used to call it rheumatism, and we used to call it syphilis, and in looking over the statistics on iritis, keratitis and various forms of sclerias, it will be found that syphilis and rheumatism used to account for all these diseases. Early in my ophthalmological career I began to doubt this proposition, in fact, I always swallowed it with great difficulty. It was as difficult for me to believe that almost all these cases were either syphilitic or rheumatic. This term rheumatism, fortunately, has been practically eliminated from ophthalmology. I presume probably there are but few diseases of the eye which are caused by acute inflammatory rheumatism. As we now understand chronic rheumatism, we might well substitute the old term rheumatic diathesis for autointoxication, because that is what it is.

Dr. Thompson is to be congratulated upon the successful results which he seems to be able to obtain in the handling of his severe cases of autointoxication. One of the difficult things that I know of is successfully to handle a severe case of eye lesions caused by autointoxication. In the first place, these patients are oftentimes in a walk of life where they have neither money nor brains, a condition difficult to control. The person should have a little money in order to be able to have certain comforts, certain surroundings, and certainly should have brains, in order that they may be appealed to. Auto-intoxication is likely to be a long drawn out process. Where patients who are fortunate enough to have both money and brains, with the assistance of our expert internists, of whose skill I am always very glad, indeed, to take advantage, results certainly should be obtained. Autointoxication is, you might say, the *bête noir* of the oculists existence, because it accounts for a very large percentage of the most difficult and intractable of all our ocular diseases.

A. C. H. Friedman, Colorado Springs: I do believe that if we followed out what the last speaker has just suggested we might get nearer the right way and quicker away from the wrong. By that I mean the following, the name "Autointoxication," is, in my opinion, the most stupidly chosen name for this class of symptoms which has been described to us by the various speakers that could be selected. There is no auto, there is no intoxication, and apparently is in no way justifiable. In one case it is that of gastroenteritis, with secondary eye

symptoms; and in another case it is appendicitis with secondary eye symptoms; in another case it is the much misused rheumatism or gonorrhea or syphilis with secondary eye symptoms. But I do believe, without wishing to go into it any further at this time, that when we come to understand the symptoms of hypersensitiveness and anaphalaxia more thoroughly we will understand much better what we now misname autointoxication.

F. E. Wallace, Pueblo: This term autointoxication can be taken in two ways, one with very narrow limits and the other very broad. Who can say that we have an autointoxication in its literal sense? Does nature go wrong? Can we have a faulty metabolism or a faulty physiological chemistry without the aid of germ life or ingested products which in themselves are poisonous? Are the various forms of intestinal fermentations, putrefactions and insufficiencies due to morbid processes without germ life?

Are we sure that we have any disease of the liver, spleen, pancreas and other parts not brought about by bacterial invasions?

Are we sure that albuminuria, diabetes and other diseases of like nature are not products of germ life or very largely influenced by them? Take syphilis, the syphilitic germ, *per se*, in the body cannot produce toxic conditions. Only by having heat, a proper nutrient media, plus a given germ, can we have any bacterial product or reaction.

If we know what produces a certain disease we name it and give the cause; if we do not, we can call it autointoxication.

So I say again, this term autointoxication can be broadly used or within very narrow limits.

In the case mentioned by Dr. Thompson—the first one, in which the appendix was removed—tuberculosis apparently was at the bottom of that intoxication, with the local lesions of the eye. I think that in many of our cases we ought to try the tuberculin test.

The corneal lesion in punctate keratitis, consists of slowly formed necrotic leucocytic infiltrates, situated below Bowmans membrane and are due to diffusible toxic substances, arising at the nerve terminals.

Optic neuritis may be caused by the toxin of whooping cough bacilli.

Authorities state that from 10 to 50 per cent of cases of iritis are due to so-called toxicic oro-alimentary or oral sepsis.

Cataract is found in middle aged people so we must attribute their etiology to other than advancing years, and intestinal toxines must be reckoned with. We all know of their influence as an etiological factor in cardiovascular diseases and consequent disturbances in the nutrition of the lense.

Retro bulbar neuritis we have found out can be caused by intestinal toxemia and a speedy cure will follow these cases when we eliminate the toxemia from this source.

Intestinal toxemias not infrequently cause a form of conjunctivitis which yields very promptly to such treatment as will stop absorption of poisons from the intestinal canal.

The most generally accepted theory of the production of sympathetic ophthalmia is that bacteria and their toxins are carried along the optic nerve of the exciting eye to the chiasm and to the other eye.

We can have retinitis, retrobulbar neuritis and optic atrophy from diabetes. Hypertension as an early symptom accompanies the retinal lesion of Bright's disease and both are due to a toxin acting through the blood.

In exophthalmic goitre, muscular paresis, as well as weakness of both internal and external eye muscles, forming a parallel to other muscular defects throughout the body, point to an auto-intoxication from the diseased thyroid gland, which acts like chronic toxemias elsewhere.

Some authorities claim that the symptoms of irritation in glaucoma are due to an inflammation caused by some toxin, and not to increased pressure. Therefore the healing effect of iridectomy is due to the fact that the secretions which contain the toxins flow out with greater ease.

Tyson and Clark have been making a study of the eye syndrome of Dementia Precox and they state that there is strong evidence that a potent toxin is responsible for the disc changes and they believe the toxin is primarily a vascular poison and that its most profitable source is in the auto-intoxication from the intestines or from the liver.

It would seem probable that in nearly all the diseases to which the body seems heir, we shall find some eye lesions as a result and its origin I believe will be found in the intestinal tract in the vast majority of cases. That bacteria in abundance are found there we all know. If so, shall we call it an auto-intoxication?

F. R. Spencer, Boulder: Unfortunately I did not get to hear all of Dr. Thompson's paper. We often see an inflammation in one or both tonsils and simultaneously an inflammation or tenderness in the region of the appendix and the gall bladder. I am stealing a little of Dr. Gilbert's thunder, when I mention this, because he called our attention to it after his return from Europe last winter. He mentioned calling Dr. Lyman's attention to it on one occasion, and Dr. Lyman said he thought it was more of a coincidence than anything else, that he did not believe all of these organs were inflamed simultaneously. We often see this same inflammation of the iris, ciliary body and choroid with tonsillitis, appendicitis or cystitis of the gall bladder. Not necessarily all, but several at one time. The inflammation in each of the several organs may be and probably is due to the same organism so this etiological factor may be as important as many of those which have been mentioned. So far as I know, the same germ hasn't been demonstrated in all of the diseased organs, but this field offers abundant opportunity for future research.

W. H. Crisp, Denver: I wish I could obtain as good results in my cases of auto-intoxication as Dr. Thompson seems to get.

I want to put in a mild plea for a gentleman

who has been rather unceremoniously kicked around from pillar to post. This term auto-intoxication, while not perfectly proper, is capable of fairly reasonable defense, I believe, especially for popular use.

What do we mean when we talk about auto-intoxication?

In these cases I realize it is really an excuse for our ignorance as to the real cause, but in a general way we mean not that the patient is being attacked by bacterial infection from outside himself in the ordinary way, but that some derangement of his own metabolic processes resulting in the circulation of substances in his blood which produce these disturbances of which we speak.

Now, this may be due to bacterial fermentation in the intestines, but that bacterial fermentation in the intestine probably depends upon antecedent disturbances of some functions of the body that had not in the first place been caused by bacteria. If a man runs a big grocery store, as in one case just mentioned, is under severe nervous tension all the time takes his meals under improper conditions, does not sleep properly, and does not get enough fresh air, the chances are that his nervous centers are so disturbed that they no longer carry on proper functions of secretion or absorption in the intestinal tract. The result is that the multiplication of certain bacteria in the intestinal tract is favored, and you have the absorption of abnormal by-products from the intestinal tract. I believe in many of these cases that is about what happens, in a very obscure way, for it is a very difficult to analyze anything that goes on in the intestinal tract. Of course when you come to deal with infections in the nasal sinuses or buccal cavity, you are not dealing with auto-intoxication even in the usual popular acceptance of the term. But I think the term auto-intoxication may yet serve for quite a while before we get a very good substitute.

Kate Lindsey, Boulder: I think whatever term we may apply to this process of the absorption of abnormal products of metabolism and their interference with metabolic action, they may account for almost any trouble. As you know, I am working in an institution where our chief business is to diet people and to give them massage and electricity and baths, and so regulate the nutritive processes as to assist nature to get rid of their waste products, whatever they may be, that lead to the use of the term auto-intoxication. We may have the intoxication from the inside and we may have it from the outside. But it seems to me that when you get an obstruction of the bowels or the formation of toxins in the alimentary canal, it is something like sand in your watch; the machinery is bound to get out of order. You may have a nice covering on the outside, gold or something more expensive, but the machinery will not work, and the watch is out of commission. The same condition, I think, to a great extent, results from what we know as auto-intoxication, and my idea of the commencement of auto-intoxication is away back in infancy.

Most children suffer from a form of intoxication due to bad dieting, especially at the present time when half of the mothers are out of commission for the purpose of furnishing food material for the development of the child. I think if you go back to the cause of the auto-intoxication and the eye troubles and rheumatism and tonsillitis and all the other resulting troubles, you have to take into consideration the mothers who are to furnish the material for the development of children, and the development of the men and women of the future. If you do not, you will have eye troubles and all the other disorders, as rheumatism and tonsillitis and all the other troubles that come from or are attributed to this despised metabolism termed autointoxication.

If the child begins its life with its alimentary canal affected by toxic products, the result is the machinery of the body is so disturbed that every organ and every function is more or less damaged and we may expect anything. As you know, an ounce of prevention is worth a pound of cure. I think infancy is the time to begin for the benefit of future generations. Then we will not have so much trouble when the children become grown, from autointoxication.

Philip Hillkowitz, Denver: I regret very much that I was not present to hear the paper. Every subject that is on the program is of interest to the pathologist, and I must apologize at the present time that in order to take part in some of the entertainments which have been arranged for us I neglected to remain here throughout the entire scientific program. I am therefore unable to discuss the paper in the same light and with the same inspiration as if I had the pleasure of listening to it.

I can only say about autointoxication that personally I do not like the term. It is like many a word in our vocabulary—a cloak for ignorance. Nevertheless, I believe this as a term that we have to use, a heuristic term, one that will serve the purpose for the present until we know the chemistry of metabolism better and can more intelligently understand the nature of the digestive processes. Until then we will have to use this expression, but we should always remember that it is only a makeshift.

At the present time a great deal of work is being done on metabolism by Professor Abderhalden. I presume it was touched on in the papers. The subject is of absorbing interest; we follow the adventures of the food, the carbohydrates, the proteids, the nucleo-proteids and the fats as they go through the intestinal canal and are acted on by the various secretions of different glands; we see the formation of numerous intermediary products from the albumoses down to the amino acids. All these substances have been the subject of a great deal of study by physiological chemists, particularly by Emil Fischer, Abderhalden and their pupils. The ferments of the digestive tract split these complex substances into their building stones, which are absorbed, then to be built up again by the various body cells

to conform to their particular structure and function.

We hope therefore that from these researches we shall be able to find out whether the intermediate products are the cause of symptoms attributable to the so-called auto-intoxications and what bearing they may have to certain eye lesions.

I was very much impressed by an address that Dr. De Schweinitz recently gave in Denver in which he spoke of some experimental research that had been done in the University of Pennsylvania on this subject, showing that indican is not an index of intestinal putrefaction.

Henry M. Thompson, Pueblo: I believe every one of us will concede that this is a condition affecting the whole organism, and making the subject of interest not only to the ophthalmologist, but to the dermatologist, the internist and other important branches of the healing art. The processes to which the human body is subject are never ending. The muscle or bone is not constructed until a finished product is reached and there allowed to remain. Each cell, each molecule in the whole part is ever prone to divergent and complex changes in its metabolism. We have much to learn concerning the chemistry of these changes; of the end products we know something, but of the intermediate changes we have proven very little. As Brieger states, our researches in physiological chemistry are incomplete and gives us scarcely any information upon which definite conclusions can be reached.

When the brilliant Bouchard came forth with his excellent work which many of the profession thought would revolutionize the ideas of this peculiar poisoning, and the conditions that result therefrom, we thought we had something new, until the men opposed to him and his view controverted almost everything he said. He was like most men, studying along one line; in attributing every condition whereof we did not know the etiological factor to what he called autointoxication, thereby doing a great deal of harm to the investigation, because after his work and after the very extensive debate on the subject at Wiesbaden in 1895, the subject suffered the lack of further development, at least compared to the way in which it was investigated and discussed before that period.

As far as the term is concerned I discussed it in the introduction to my paper feeling that I had prepared well for the opposition, but even with my fortifications constructed the enemy has boldly advanced. I think, for the time being, at least, it is as suitable a term as we can adopt, for we cannot improve our nomenclature, when our knowledge of the physiological and pathological changes is so limited and the actual source of the trouble unknown. Surely the term is worthy of acceptance when such an array of authorities as Combe, Elschning, Bouchard, De Schweinitz, Von Jacksch, together with many others, use it as the best adapted for the condition at the present time. Why should we destroy before

we are able to reconstruct in a satisfactory manner? We do not know whether the toxins, putrefactive or vegetable alkaloids, or whatever term you choose to apply to them, are formed from chemical processes in substances in the intestine introduced wholly from without or within or whether they combine with certain enzymes secreted from intestinal glands. The particular product of putrefaction may be taken up in the blood stream, or lodged in the tissues where it is acted upon by some product, the result of an internal secretion. Who knows? Until these men, who are attacking the term, will show us a better road, demonstrate something definite or give us a brighter light, I believe that the term autointoxication designates the condition as concisely as anything we have.

Dr. Singer suggested that these conditions of intestinal obstructions, adhesions or a troubled appendix which by reflex disturb the intestinal digestion thereby giving rise to autointoxication, should be called mechanical obstruction. That is true, but it is an interference with the digestion which gives rise to fermentation products, and their absorption interferes apparently with the general metabolism. Should we choose, in this way, to give each condition, that we include in autointoxication at the present time, a definite term, I think we will be in much deeper water than we are at present.

In the discussion reference was made to a case which I reported where a probable tuberculosis of the appendix and peritoneum was secondary and the autointoxication the primary etiological factor in the eye lesion. It was suggested that the eye condition was a direct result of the tubercular process. I very strongly differ on this point and do not believe that the tuberculosis was the primary cause of the trouble for the following reasons: The patient was very strong and enjoyed excellent health up to her eighteenth year, when she accepted a position which required close confinement and hard work. Her family history was perfectly clear. A few months after beginning her sedentary occupation she was more or less constipated, which condition did not apparently interfere with her general health to any degree. As I related, she was supposed to have peritonitis two years later and for the next two years obstinate constipation. Now we all know that tuberculosis does not take place in the normal individual with normal resistance. With that you will all agree. Furthermore, I have seen this case in the last week and she is enjoying excellent health, not withstanding her occupation. The adhesions were relieved, the reflex disturbance disappeared and the intestinal digestion could proceed normally. The autointoxication was cured and the patient made a remarkable recovery. I claim, therefore, that in this particular case the toxemia, a result of her intestinal disturbance, due to her occupation, allowed the tubercular infection to take place. However, I did not say definitely that the process was tubercular because it was not proven by microscopical examination and I hesitated to

accept the term tubercular unless better proof was given me.

The use of an autogenous vaccine was suggested in these cases. Let me say that the autogenous vaccine will raise the resistance of the individual for the time being only and not remove the cause of the trouble. If we were dealing with an infection and the toxemia only temporary, well and good, but these troubles come from some derangement in the organism and unless we remove this derangement we cannot get any permanent results.

ARRESTED DEVELOPMENT OF CANCER.

When the April issue of Colorado Medicine was made up the discussion of Dr. G. A. Boyd's paper on "Arrested Development of Cancer" was omitted. The discussion had been temporarily lost. It has been recovered and is interesting and important enough to warrant its publication, even though its appearance is not quite timely.

DISCUSSION.

Lewis L. McArthur, Chicago: When Hodenpyl was actively at work with his serum I happened to have some patients in Chicago who, hearing of the benefit to a patient that Dr. Bevan had sent east to Hodenpyl, desired me to use the treatment upon them. I succeeded in getting from Hodenpyl some of this fluid.

In using it there was undoubtedly a reaction in each of the patients. All precautions were taken to get aseptic serum. I sent my assistant to New York with special caution to bring it back in an aseptic manner. Hodenpyl himself brought one of the specimens to me. Unfortunately I saw the fluid was infected from the Hay bacillus, and a local reaction occurred at the point of injection, so that we could not continue the use of it.

With the essayist I believe that there is a secret there to be unraveled. There is a curative action probably upon the patient himself of this ascitic fluid but not so effective upon other patients. It is my idea that some of this ascitic fluid gained access through the many punctures made into the general circulation and in that way after the numerous tapplings gains the benefit which accrues from those tapplings by the entrance into the circulation of the fluid.

Whenever then we get hold of a case of metastasis or carcinoma of the liver, with the consequent ascites, I believe it will prove justifiable to utilize this serum on the patient himself, by aspirating it from the abdominal cavity and then putting it into his general circulation. I trust, though, they will not permit their patients, like Dr. Hodenpyl's patients, to be made the subject of gain. I had to raise \$2,500 for that patient. They were going to

syndicate her, and for the supply I got I had to raise \$2,500.

Emil H. Beckman, Rochester, Minn.: I have had no personal experience with these cases, but I had the privilege of attending a conference in New York City between Dr. Brewer, Dr. Hodenpyl, and Dr. Crile of Cleveland. This conference was held for the purpose of discussing the various stages of this case of Dr. Hodenpyl's. I believe Dr. Brewer was the operating surgeon.

The case was a woman who had a carcinoma of the breast, or a little tumor of the breast, which was removed, and the diagnosis at the time of the removal was a benign tumor. She had a rapid increase in the size of the breast, and about six weeks later the breast was removed and it was found to be a very rapidly-growing carcinoma, with glandular involvement.

The patient then proceeded to develop nodules in various parts of the body, and became rapidly worse, bed-ridden, and developed ascites. Everyone supposed the patient was going to die. The ascitic fluid was drawn off then. It formed with marvelous rapidity, so that they drew off about three gallons every two weeks. In experimenting with animals they found that this fluid when injected into mice having carcinoma, killed the mice if large doses were used. If they injected a smaller dose alongside of the tumor they found that the tumor itself, the carcinoma itself had disappeared and left only connective tissue.

At the time of this conference the patient had improved so that she was able to be up and about and a great many of the nodules had apparently disappeared. As you all know, of course the patient finally went on and succumbed to the disease, and as shown in the autopsy report, the liver had been almost entirely destroyed with carcinoma and the patient still had the nodules.

The recent work of Wiel just reported in the *Journal of the A. M. A.*, on the copper salts for carcinoma, shows that we are very apt to be deceived in the size of the tumors and in regard to their disappearance. The actual measurements show that the size increases when we think by observation that they are decreasing. As Dr. Boyd has pointed out, this seems to show that there must be some natural tendency in the body of certain patients to cure carcinoma, and if we only had the insight to read aright, we probably would find a cure for carcinoma.

The suggestion of Dr. McArthur of injecting the ascitic fluid into the patient seems to be exactly along the line of the latest developments in salvarsan. Apparently you get the best results by injecting the serum from the patient back into the patient, and I think this is a very valuable suggestion and should be tried whenever we have these cases.

These cases are certainly very interesting and should be reported.

W. F. Martin, Colorado Springs: We had recently at Colorado Springs a case similar in some respects to the one mentioned by the essayist. The patient that I speak of is now

fifty-one years of age; a widow. In November, 1907, I removed a rapidly-developing carcinoma from the right breast, doing a Halsted operation. Within three months after the removal of this breast the left breast was removed for the same cause. The x-rays were used for varying periods and she still shows the marks of the x-ray exposures.

Two years ago an abscess of the right arm developed; the bone itself did not seem to be enlarged. An x-ray picture at that time showed it apparently normal, but the tissues of the arm and the forearm were decidedly enlarged, and an abscess was opened by incision on the inner side of the humerus, and at the lower end.

Secondary growths in the neck and on both sides occurred following this, and a secondary growth was removed below the scar that showed after the removal of the left breast.

That was two years ago. An abdominal swelling was first noticed in April this year, and it became so great in amount and so distressing to her that after postponing the tapping for as long a period as I dared, I removed a bucketful of ascitic fluid. At that time a distinct mass was felt in the lower left quadrant of the abdomen. The liver was not apparently enlarged. The tapping continued at intervals of every two weeks at that time until six weeks ago, the abdomen filling up to the full measure of the original amount, as indicated by the amount drained off, and also by the measurement of the abdomen, and each time of course she was temporarily relieved, but the woman was steadily getting weaker, and the end seemed not far off.

Six weeks ago, however, she had her last paracentesis and from that time to the present time she has showed a steady and continuous improvement. The appetite has returned; the ascitis is now very slight; the abdomen perhaps contains about half as much as it had before when distended, and she is gaining in flesh and in every way feeling better, and going about.

One important point which I did not mention is this: that along the anterior part of the left trapezius muscle a distinct infiltration of a very dense character, undoubtedly carcinomatous, took place more than a year ago, and shortly after that she became distinctly aphonic. There was a marked rigidity of the neck, so that she had great difficulty in moving it to any extent, and noting that with the other symptoms at the present time I have to state that this distinct enlargement is perhaps diminished one-half.

Dr. Boyd saw the case the other night with me and remarked upon the fairly free mobility of the neck at this time.

This woman now has in her abdomen perhaps a gallon of fluid. There is certainly a retrogression in all the bad symptoms. The growth in the neck is distinctly smaller, and the woman seems to be gaining in flesh. I do not look for a complete recovery, but I do mention as worthy of note the fact that after

months of retrogression she has been showing a steady gain in the last six weeks.

O. M. Gilbert, Boulder: I think that the spontaneous cure of cancer in rare instances is an established fact.

I believe that the point made by Dr. McArthur of the autogenous serum is the point which we must bear most largely in mind. I believe our greatest hope lies in that, or at least so far as we can see, it is in that direction.

Along this line, there comes to my mind a case that I had some years ago which came from Sheridan, Wyoming, in which I diagnosed, as I thought, unmistakably, cancer nodules in the liver—probably, primarily, of the stomach, with metastases in the liver. I recommended that one of our Denver physicians see her to confirm the diagnosis, but instead of that she went to a massaging quack, and he almost killed her by his extreme manipulations, the patient saying she could distinctly feel the growth being pulled out by the roots, and she came near to dying.

I had given the woman about six months to live, and, to my intense surprise, she apparently recovered, and repeated reports came to me for nearly two years that she was apparently well, though she finally relapsed and died.

It has occurred to me since this discussion has been going on that it is possible and even probable that this quack, by breaking up the adhesions, had liberated some of the woman's serum into her circulation and caused this temporary arrest by the "autogenous serum cure."

I should like to ask Dr. Martin if he has used any of this woman's ascitic fluid for injection in her own case?

W. F. Martin: I have not done so. It occurs to me that perhaps very minute amounts may have gotten into the circulation as a result of this tapping. I shall do so on my return.

Frederick Singer: I should like to suggest that if the Doctor does this he keep on hand a sufficient amount of this fluid so that when the time shall arrive that the woman no longer secretes fluid he will have an autogenous serum that he may use. It seems the history of this case points to the possibility that after a time the body loses the power of revaccinating itself, and if he had then this fluid to continue on, if the case is not entirely cured, until such time as he might expect it would be, it would be desirable.

F. C. Buchtel: I had occasion to reinject one patient with pleural effusion following carcinoma of the breast. We made accurate blood counts before and after each one of these injections. The woman died in the course of two or three months after the pleural recurrence, but we noticed that we had a marked blood change following each injection. This was a couple of years ago, but my recollection is we had a marked decrease in the number of polymorphonuclears and an increase in the large monomorphonuclears. This would make one feel that the injection did have some action.

George A. Boyd, Colorado Springs: I have little to say except to thank you for the discussion. The interesting part of the cancer problem was beyond the scope of my paper.

Bashford, of England, has written probably one of the most concise articles on the cancer problem. Handley, of England, has given a theory of cancer in which he states that all cancer aggregates have a natural life cycle. If you read the paper and the evidence which he produces you will be very much impressed with his theory. Ewing of New York has written probably one of the best summaries of our knowledge on cancer problems. It is to be found in the Archives of Internal Medicine of February, 1908.

EXCERPTS FROM RECENT LITERATURE

Surgery of Gastric and Duodenal Ulcers—A Critical Abstract.—The fourth triennial congress of the International Surgical Association met in New York last month and devoted one day to the discussion of the above subject. In a measure we are somewhat disappointed because nothing new or startling was offered by the various essayists who contributed papers on that day. Nevertheless, the discussion of the matter brought out many points of interest, and will no doubt stimulate the profession in general to greater efforts towards clearing the

cloudy horizon from this still mooted question.

Here are a few of the uncertain problems in diagnosis which De Quevain of Brazil has asked the congress to decide: (1) What was the frequency of spasm in the superficial ulcer of the lesser curvature? Under what conditions did this spasm occur in the absence of any ulcer? (2) What influence had ulcers removed from the pylorus on the latter? (3) What were the surest and most practical distinguishing signs between pyloric spasm and pyloric stenosis in the beginning? (4)

What differentiation was there between duodenal ulcers encroaching upon the pylorus, true pyloric ulcers and duodenal ulcers of low situation from the point of view of their action on the pyloric reflex and on the gastric chemism? (5) What were the surest radiological signs of the adhesions from the stomach and the duodenum?

The relative frequency of gastric and duodenal ulcers is evidently different in this country from that of France or Germany. Mayo says that the percentage in the last 1,000 cases accurately observed showed 73.8 duodenal and 25.2 per cent gastric, while Hartman and Lecen of Paris noticed on an average one ulcer of the duodenum for eight or ten ulcers of the stomach. In a series quoted by Sonnenberg of Berlin he found thirteen duodenal to sixty-seven gastric ulcers. Is it possible that the pyloric vein is so differently located in the French or German stomach, or is it merely a coincidence? However, the consensus of opinion at the present points to the greater frequency of the duodenal variety than the gastric form and that the more common seat of the latter was along the lesser curvature, more often on the posterior than on the anterior wall. Multiple ulcers were not frequently found at operation.

A large number of acute, subacute and chronic ulcers were cured permanently by medical treatment, but if the cures failed to show permanency after a reasonable attempt at cure under ordinary conditions of life, the patients should be treated surgically. There is one fact which ought to impress anyone who insists upon the medical treatment of these cases, and that is that the patient with ulcer treated medically is in far greater danger of death from hemorrhage, perforation, obstruction or cancerous degeneration than he would be from an operation.

It is true that in a small percentage of cases of both gastric and duodenal ulcers there has been a definite recurrence of symptoms, and in which it would appear an actual redevelopment of the original ulcer had taken place. Whenever these patients are reoperated the source of trouble proves to be a gastro-jejunal ulcer in the suture line of the original gastro-jejunosomy, as a rule due to sloughing of the continuous sutures of silk or linen which had been used in suturing the stomach to the intestine. Mayo and others have found that in such cases the unilateral pyloric exclusion of Von Eiselsberg as a secondary operation has given permanent relief.

The operation of choice in all forms of ulcer is that of gastro-enterostomy, and Lambotte of Brussels says that pyloric exclusion constitutes an important supplementary procedure to gastro-enterostomy. He claims to have been able to verify the permanence of the occlusion several months later. Gerster of New York claims that pyloric exclusion, no matter how established, did not secure against the re-establishment of communication, and that after operation the patients experienced relief, but they were not cured, as the ulcer was due to a condition that we do not understand, and unless the operation was reinforced by proper diet and hygienic measures the relief was only temporary. Beven also emphasized the importance of proper medical care after the surgical operation. O. M. S.

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Cultivation of the Organism of Epidemic Poliomyelitis.—S. Flexner and N. Noguchi (*Berlin. Klin. Woch.*, 1913, 1.

1693) have demonstrated by animal experimentation that the microorganism isolated and grown by them from monkeys and man suffering from epidemic poliomyelitis, can produce identical histological and clinical changes in the inoculated monkeys.

The cultivation of the microorganism is the problem which Flexner and Noguchi have solved.

Human ascitic fluid containing a piece of fresh sterile rabbit's kidney was found to be the most satisfactory media. Exclusion of oxygen was absolutely necessary, contamination being very easy. Great pains had to be taken to exclude turbidity, precipitation and gas formation. Having successfully accomplished this, it was found that the culture fluid presented a series of opalescent gradations in the growth of the microorganism for a period of twelve days, when the diffuse opalescence began to clear and a sediment collected at the bottom of the tube. Cultures from various sources, as infected man and monkeys, proved to have similar characteristics, both morphologically and with dyes.

The organism stains best with Giemsa's or Gram's stain and may be round, in pairs, in short chains or irregular conglomerate masses. They will pass through a Berkefeld filter, and it is probable that some of the organisms are much smaller than those demonstrated.

Secretion of Urotropin by the Mucous Membrane.—A. Leibecke (Berlin. Klin. Woch., 1913, l. 1698), in experiments with urotropin as a drug efficient in antiseptizing the mucous membranes of the body has reached the following conclusions: Urotropin appears in the urine one-half hour after administration; in the cerebrospinal fluid in three-quarters of an hour; in the ear and bronchial secretions in two

hours, and in peritoneal exudates after four hours.

It disappears from the secretions of the ear after fifteen hours; from bronchial pus after thirty hours; from milk after twenty-one hours, and from cerebrospinal fluid after fifty-three to seventy-seven hours.

The greatest concentration is contained in the cerebrospinal fluid and milk after giving the drug.

In the exudate from the middle ear the greatest concentration is reached only after four to six hours after administration.

In doses of 1 gram the maximum concentrations in the ear were 1 to 10,000; in peritoneal pus, 1 to 12,000; in cerebrospinal fluid, 1 to 15,000; in bronchial exudate, 1 to 20,000. No cumulative effect was demonstrable in milk, cerebrospinal fluid or aural pus. In concentrations of 1 to 10,000 and 1 to 6,000 in aural pus, the effect on bacterial growth was doubtful.

Relatively large doses within six or seven hours during which the patient drinks freely of water, is recommended as the best method of administering urotropin.

Sodium Citrate and the Curdling of Milk by Rennin.—A. B. Bosworth and L. L. Van Slyke (American Journal of Diseases of Children, April, 1914) have attempted to demonstrate the fact that rennin will not curdle milk in the presence of sodium citrate, and to cite reasons therefor.

Their conclusions are mainly that sodium citrate added to milk increases the amount of soluble calcium in the milk, resulting from a reaction between the calcium caseinate of the milk and the sodium citrate, forming sodium caseinate and calcium citrate or a double salt of sodium-calcium caseinate, this being the inhibitory chemical agent.

One and seven-tenths grains per ounce of sodium citrate added to milk will prevent curdling, and in smaller quantities, .2 to 1.5 grains per ounce of milk, the curd is much softer in consistency.

The amount of sodium citrate added to the milk is governed by the desire to prevent curdling altogether or merely to modify the character of the curd.

Chromaffin Tissue.—This particular tissue, so-called on account of its special staining affinity for chrome salts, taking on a brownish color, is derived from neuroblasts of the central nervous system, and deserves mention because it secretes the active substance adrenalin. Adrenalin itself has been used extensively, but only lately have investigators been able to work out its embryologic and physiological relations. Chromaffin tissue is found in man lying close upon large sinusoid capillaries in the medulla of the supra-renal bodies, and to this particular part of the supra-renal gland much attention has been called on account of its need in sustaining the life of the individual.

It has been determined that adrenalin, the active substance of chromaffin tissue, is a purely physiological secretion and stimulates the terminations of the true sympathetic system. Thus in the case of the ferret stimulation of the hypogastric nerve causes contraction of the bladder. So does adrenalin. In the cat, stimulation of the hypogastric nerve causes relaxation of the bladder, which is also the case when adrenalin is used. This shows that adrenalin acts merely as a stimulant to the sympathetic nervous system, regardless of the end reaction in the particular nerve stimulated.

The relationship between adrenalin and glycosuria is also one of stimulation of the sympathetic. When the splanchnics are stimulated a vaso dilation in the

supra renal glands results with the outpouring of adrenalin into the blood stream. This in turn acts upon the sugar metabolism in as yet an unexplained manner, bringing up the question as to whether adrenalin is a "sensitiser" to some other internal secretion. Fright and stimulation of the sciatic nerve can produce an excess of adrenalin in the blood and produce a glycosuria.—"Regulators of Metabolism," D. Noël Paton.

A special afternoon will be set aside at the state society meeting, for the report of clinical cases; time for report seven minutes. Those who have cases that they would like to report should at once notify Dr. Aubrey H. Williams, Metropolitan Building, Denver.

Volunteers are now called for, for the program of the state society. Report at once to Dr. Aubrey Williams, Metropolitan Building, Denver.

The Committee on Scientific Work is now at work on the program of the state society for the Boulder meeting. Those desiring to read papers should at once notify the chairman, Dr. Aubrey H. Williams, Metropolitan Building, Denver.

News Notes

Dr. Philip Hillkowitz, Denver, was recently the guest of the Teller County Medical Society. He delivered an address on this occasion which was of the usual interest which the doctor always manages to arouse.

Dr. Hubert Work has been chosen committeeman of the Republican party for the state of Colorado. Doctor Work is one of those geniuses who can mix medicine and politics without producing an incompatible combination.

The wife of Dr. C. B. Lyman is recovering from a surgical operation.

Dr. H. G. Wetherill delivered a lecture at Montrose on "Public Health," April 16.

Dr. Frank Blackmer of Steamboat Springs has returned from Minnesota, where he went to attend his father in a fatal illness.

Dr. P. P. Lester, for a long time one of the

most prominent physicians of Walsenburg, Colo., was killed, April 29th, while on duty with the Colorado National Guard.

The engagement is announced of Dr. Stanley B. Eichberg and Miss Leona Levy. The bride-to-be is a daughter of Dr. Robert Levy. Doctor Eichberg is a young surgeon of ability and promise in Denver.

Dr. W. V. Mullin and wife of Colorado Springs, are spending several weeks in Vienna and other European cities, where the Doctor is doing post-graduate work.

Dr. A. H. Peters, Colorado Springs, was recently confined in the Glockner Hospital suffering from a suppurative adenitis of the cervical glands.

The engagement of Dr. John F. Roe and Miss Lee Howard has been announced. The wedding will take place in June. Doctor Roe is surgeon for the Denver & Rio Grande railroad. Miss Howard is the daughter of the late Charles P. Howard, who was one of the wealthiest ranchmen in northern Colorado.

The wife of Dr. A. P. Hubbard of Meeker died in Denver, April 27, following an operation for appendicitis. Doctor Hubbard is a member of the Mesa County Society and was sent a message of condolence by that organization.

Dr. William H. Crisp has been honored by election to the presidency of the Denver Philosophical Society.

Dr. Hugh L. Taylor has gone to California to visit his brother, Dr. Ralph Taylor.

S. Grabfelder of Philadelphia has donated a medical building to the National Jewish Hospital for Consumptives. The building will cost about \$50,000.

Dr. William C. Finoff and Miss Lucy Hood were recently married in Denver.

Dr. Benjamin F. Mathews is the father of a son and is busy receiving congratulations and building paternal ambitions.

Dr. Saling Simon has gone to Europe for the summer.

Dr. H. G. Wetherill has been giving illustrated lectures upon his recent enjoyable motor trip in England and on the Continent of Europe.

Constituent Societies

BOULDER COUNTY.

The Boulder County Medical Society met at the Boulderado hotel Thursday evening, March 5th, at 7:30 p. m. The meeting was called to order by Dr. L. M. Giffin in the absence of President Gillaspie.

Dr. C. W. Poley was elected to membership.

Dr. Clay Giffin called attention to cervical stretching for epistaxis and gave Dr. G. H. Cattermole due credit for referring the society to the article in the Journal of the A. M. A. Dr. Clay also spoke of using a cundrum over a catheter in the nose and inflating this with air to control epistaxis. He stated that he was indebted to Dr. F. H. Farrington for this suggestion.

Dr. F. R. Spencer spoke of using a collapsible rubber ball, filled with water, in the nasopharynx, for post-nasal hemorrhage.

Dr. Francis Ramaley, professor of biology at the University of Colorado, gave the address of the evening on "Heredity." He spoke of the inheritance of night blindness and the work done by an English scientist; also on hereditary color defects in the eyes, i. e., color blindness and the color of the irises. He emphasized difference in color of different irises in the same family. If two parents have irises without pigment their children will have non-pigmented irises and vice versa usually. Dr. Ramaley spoke of the absence of the middle phalanx of each finger and its inheritance. He showed x-ray pictures of "brachydactylous" hands. Disease doesn't skip a generation, as normal parents have normal children. In other words, if a child has "brachydactylous" hands, one or both parents must have the same trouble. Minor brachydactyly less marked. Huntington's chorea is also hereditary if either one or both parents have the disease. Feeble-mindedness is apt to show in children of alcoholics. Many such children die in infancy, if both parents are feeble-minded. Later disease due to trauma or disease not considered Mongolian idiocy mentioned. Heredity of sex shows about equal division of males and females. Sex related to exchromosomes. Female always has the larger number of chromosomes.

Professor Morgan of Columbia University, has done a great deal of work on the color of the eyes of fruit flies. He worked constantly on this for one year.

Dr. G. H. Cattermole spoke of Mongolian spot over the coccyx. This never occurs in blondes, but does occur in brunettes.

Dr. Ramaley answered a great many questions and his address was well discussed.

The meeting adjourned to meet Thursday evening, March 12th. F. R. SPENCER, Secretary.

The Boulder County Medical Society met at the Hotel Boulderado, Thursday evening, March 12, at 7:30 p. m. Twelve members were present.

Dr. H. A. Green, of the Colorado Sanitarium, gave a review of surgical shock with some abstracts of recent journal articles. He emphasized an experience he saw a colleague have in his early professional career.

Shock may be due to trauma or disease. The Mayos say they haven't seen shock for several years. Cause of shock due to excessive nervous excitation, especially of the sympathetic system, which results in tonic contraction of the heart and arteries. Cryle takes the opposite view. He thinks venous pressure fails. Some authorities favor, therefore, the use of strychnine, and others do not. Strophanthin advocated by some; digitalis and caffeine by others. A hypodermic of camphor was used by the late Dr. Nicholas Senn. Pulmotor used by many. Heat should be applied with friction. The Mayos say their patients have collapse and not shock.

Dr. Greens' paper was discussed by Drs. L. M. Giffin, W. W. Reed, Snair, Fred Weber and Gillaspie.

Dr. F. R. Spencer gave a brief review of Col. Elliot's "Sclero-Corneal Trephining in the Operative Treatment of Glaucoma." He showed illustrations from Elliot's latest book and his trephine for the operation.

Dr. Snair stated that he had four cases of diphtheria in Louisville. City health officer C. T. Burnett stated that Boulder had been without diphtheria since December. He spoke of the few cases of small-pox and that the new cases weren't developing, as a result of the precautions taken.

F. R. SPENCER,
(By E.T.) Secretary

The **Boulder County Medical Society** met at the Hotel Boulderado, Thursday evening, April 2, at 7:30. The meeting was called to order by President Gillaspie, who introduced President Farrand as the speaker of the evening.

Dr. Farrand emphasized the great advance in our knowledge of the etiology of disease in the past few decades and the necessity of having the prevention of disease keep pace with this. He spoke of our inadequate statistics in this country and the failure of practicing physicians to aid in this work.

In New York city, since 1896, tuberculosis has been reported to the board of health, and for the past one and a half to two years, venereal diseases have been reported.

The proper administration of public health laws is now well recognized by the laity, but it needs the support of the medical profession.

Dr. Farrand feels that, by the proper co-operation between the university and the city of Boulder, prevention of disease can be carried to a point of maximum efficiency. If the city will appoint the university to look after the public health, this can be done almost perfectly. A man should be called to take charge of this work as a sanitary expert, with the university laboratories at his disposal.

Many states have laws requiring that the health officers be practicing physicians, and this shouldn't be. President Farrand referred to New York law and the opposition it had in the medical profession.

This work should be done by a man who can give his entire time and attention. The laity should be educated in the prevention and control of diseases. New laws can be made and old ones changed where this can be done for the public good.

Dr. Farrand asked for the hearty co-operation of the medical profession.

Dr. O. M. Gilbert asked President Farrand how he would attack tuberculosis.

Dr. Farrand advocated proper care of all cases in institutions. Children should be inspected in the schools. He advocates proper laws, but not sweeping or drastic action in intelligent communities like Boulder. Reasonable education should be undertaken in public schools.

Dr. Gilbert spoke of patients entering hotels and rooming houses for a time in Colorado and leaving without having the rooms fumigated.

Dr. C. T. Burnett spoke of the state laws against spitting and for reporting cases, etc.

President Farrand called for suggestions and criticisms of the plan the University has advocated.

Dr. G. H. Cattermole stated he didn't see how it could be criticised, as such a plan is far superior to plans in other small cities. Sanitary expert would have to be a physician to do the city's work.

President Farrand said he realized a physician would have to do the clinical part of the work. He emphasized the harmonizing of work of a sanitary expert and that of a clinician. A sanitarian must be a trained physician and a sanitary engineer, as well.

Dr. O. M. Gilbert spoke of the importance of this step and that undesirable local physicians shouldn't be given this work for political reasons. Organized effort is needed. There will be very little opposition.

Dr. O. M. Gilbert moved and Dr. C. T. Burnett seconded, that the plan be given the hearty support of the **Boulder County Medical Society**. The motion carried.

Dr. Clay Giffin moved that a copy of this resolution be sent to the city council. The motion was seconded and carried.

Dr. E. B. Queal asked if anti-toxin can be furnished poor people later. President Farrand said he hoped this would be possible.

The society voted to elect President Farrand as an honorary member of the society and he was also given a vote of thanks for his address.

The society adjourned to meet Thursday evening of next week.

F. R. SPENCER,
By E. F. Secretary.

LAS ANIMAS COUNTY.

The **Las Animas County Medical Society** met in regular session April 3, 1914. The following members were present: Drs. Chase, Finney, Jaffa, Espey (J. R.), Robinson, Richie, Harvey, McClure, Ford, Abrahams, Freudenthal, Scannell and Ogle, with Dr. T. A. Stoddard of Pueblo a guest. At the request of General Chase, Captain Finney substituted for Major Jolly, who was to have read a paper. Owing to the brief notice of only two or three hours that the essayist had for preparation, the paper was a short one. After the reading, the Captain called the hospital steward, who, with a detail from the Hospital Corps, gave an exhibition, consisting of a stretcher drill, methods of carrying disabled men, etc.

Dr. Stoddard made a fine address on "Cancer of the Cervix."

The secretary reported that all active members had paid the dues to the State Society.

It was moved, seconded and unanimously voted that a committee be appointed to see what arrangements could be made to have a banquet with the medical men in the military as our guests at the Cardonas Hotel.

There being no discussions, the society adjourned, to meet in May.

BOULDER COUNTY.

The **Boulder County Medical Society** met at the Hotel Boulderado, Thursday, April 9, at 7:30 p. m. The meeting was called to order by President Gillaspie.

Clinical Cases—Dr. A. G. Walker reported a case of poisoning in several patients. A woman gathered stramonium seeds and ground them in a coffee mill. Later she ground coffee in this, which was used by several people. These patients later developed vertigo, and some nausea and vomiting.

Their pulse was at first slow, but later became very rapid. Some were semi-conscious and others talkative. All grew better and then relapsed. One patient had urticaria on the neck, and all had more or less erythema. One patient became very quarrelsome, and another very happy. Many fell repeatedly in trying to walk home, and all had dry throats.

One patient had abdominal pain (intestinal) fourteen hours after taking the coffee. All were hypersensitive and passed urine freely. The pulse was slow while reclining. Almost all thought the "whole affair was a joke." There were five cases in all, and cyanosis of the face was pronounced in all.

Eserine and apomorphine were administered and the stomachs washed. Brandy was given a few. Epsom salts and turpentine enemata were administered to all five. Dr. Snair saw some of these cases and Dr. Farrington others.

Dr. O. M. Gilbert called attention to the fact that apomorphine given by the stomach doesn't produce nausea and vomiting. It must be given hypodermically to produce vomiting. He also stated that hysteria almost never occurs in patients who are really seriously ill.

Dr. Gilbert referred to an article he saw recently in a German journal on the "leukocyte picture" at high altitudes, which confirms Dr. Webb's work. The article was by two investigators in Switzerland.

Current medical literature was reported by Drs. Kate Lindsay and Francis Ramaley.

The meeting adjourned, to meet Thursday evening, April 16, 1914.

By E. F. F. R. SPENCER,
Secretary.

LAKE COUNTY.

The regular meeting of the **Lake County Medical Society** was held in the office of Dr. J. G. Schall Thursday evening, April 16. The president, Dr. A. J. McDonald, presided.

The society was pleased to have as guest Dr. G. B. M. Bower, who gave a very interesting account of an epidemic of meningitis which occurred in his practice in the vicinity of Vernal, Utah. He stated that the first seven or eight cases died before the Flexner serum could be obtained, and that of the succeeding cases—some thirty or more in number—treated with the serum, but two proved fatal. He also spoke of the great prevalence of trachoma among the Ute Indians, which was becoming a menace to the white population. In treating these cases the Indians ground up

their glass beads, thus paralleling the present-day sandpaper operation.

Dr. Schall presented an excellent paper on "Foreign Bodies in the Cornea," laying special stress upon the importance of preventing infection. He also showed an interesting case of specific keratitis in a boy eleven years of age, and a beautiful microscopic section of a normal cornea.

The society then adjourned to meet the first Thursday in May.

E. A. WHITMORE, Sec'y.

BOULDER COUNTY.

The **Boulder County Medical Society** met at the Hotel Boulderado, Thursday evening, April 16, 1914. Eighteen members were present. The meeting was called to order by President Gillaspie.

Dr. W. J. White, of Longmont, gave an address on the "Medical Aspects of Malpractice."

He prefaced his remarks by emphasizing the legal contract between the patient and the physician. This is usually verbal and comes under the "laws of contracts." This implies that a physician has a certain amount of knowledge and skill measured by the standards (professional) in similar localities. It is measured by his school of medicine also, or his school of practice.

Certain principles and rules are now well established and should be adhered to by all schools of practice. If we deviate from this we are liable to criticism.

Progress of medical science determines our standard too. We must keep abreast of the times reasonably well, although the courts don't demand that we all be leaders. Due care and diligence must be exercised in the care of any case.

Physicians can't leave serious cases without due notice although a reliable substitute may be sent. Due diligence is necessary with prescriptions. Contracts are often best in writing when we send substitutes. Physicians are often too careless about this.

A physician's best judgment must always be used and laws expect this. In serious cases this can be ratified by consultations. Fractures constitute sixty-five per cent of all malpractice suits. Courts will not permit experiments.

Dr. White quoted from Taylor's book on the "Law in its Relation to Physicians" and read one case from this.

Dr. White's paper was discussed by Drs. L. M. Griffin, Campbell, Gilbert, Spencer, Bennett, Queal, Clay Giffin and Walker.

F. R. SPENCER,
Secretary.

COLORADO OPHTHALMOLOGICAL SOCIETY.

The regular meeting of the **Colorado Ophthalmological Society** was held April 18, in the offices of Dr. Bane. Attendance, twenty.

Dr. Coover presented a case of corneal leu-

coma which had recently become ulcerated. There had seemed to be imminent danger of losing the eye, but steady improvement had followed curement and subsequent subconjunctival injection of 15 m. of a 1:1500 solution of cyanide of mercury.

Dr. Crisp presented two cases of congenital absence of the external rectus muscle, one affecting the right eye and the other the left. Neither patient had ever had diplopia, although both had practically normal vision on the defective side. Dr. Crisp also presented a boy who had been referred for refraction on account of a generally distributed muscular tic and whose eyes presented the following peculiarities: heterochromia, anisocoria, inequality of the palpebral apertures and inequality of refraction.

Dr. Bane showed the late results of caustic soda burn in a case previously brought before the society.

Dr. Libby showed a colored drawing made by Dr. Bane of a case of tuberculosis of the conjunctiva previously presented to the society.

Dr. Jackson reported that a case previously described as probably one of very early tumor formation at the macula now appeared to be one of atypical retinitis circinata.

Dr. Crisp reported a case in which persistent pain over one eye with symptoms of neuritis in the neck and arm on the same side had cleared up completely after opening of a minute abscess at the root of a crowned tooth.

Dr. Magruder reported a case of albuminuric retinitis, first observed after Cæsarian section. The optic discs were choked. The amount of albumin was heavy, but fluctuated, and the vision varied from day to day inversely with the amount of albumin.

WILLIAM H. CRISP, Sec'y.

BOULDER COUNTY.

The Boulder County Medical Society met at the Hotel Boulderado Thursday, April 23, at 7:30 p. m. The meeting was called to order by President Gillaspie. Eighteen members were present.

Dr. Cuthbert Powell of Denver gave an address on "Medical Examinations for Life Insurance." Dr. Powell's paper was discussed at length by Drs. C. T. Burnett, Snair, Gilbert, L. M. Giffin, Clay Giffin and Dr. Fred Weber. Dr. Powell was asked a great many questions.

Dr. Gilbert gave a clinic on a case of Syringomyelia. Patient was a man of forty-five years of age, of good family history; he had dissipated considerably in his earlier life, but denied syphilis. About seventeen years ago he had shooting pains in the left side of the chest for several months. About twelve years ago he noticed that in walking he would have a peculiar "electric shock" running through his body when he got a jar, for instance, in coming down on his heel rather heavily. Also noticed about that time that his left hand was somewhat weaker and a few years later noticed that when warming his hands the left one did not feel the warmth from the fire

and he had to be careful that he did not burn it. Was otherwise well until April, 1904, when he started to get out of bed and fell, on account of weakness in the left leg. Thinks the face was not affected except that his left eye twitched. His speech was not affected. Was back to work in pool hall in two weeks but arm and leg remained weak. Four years ago he noticed that he dragged the left leg a little and stumbled. By fall had to use cane, then felt numbness in right arm; grew steadily worse. In October, 1911, he went to Hot Springs, Ark., but grew worse. He walked until a year ago, when he was forced to quit on account of weakness in legs. Lost sexual power completely two years ago. Had shooting pains in head and neck. Ears, especially left, right hand and both feet have burning sensation but feel cold to touch. Left forefinger was badly burned but was not conscious of it. It healed very slowly. Patient now suffers from shooting pains in neck and head which are worse when he lies down. He startles abnormally. Bladder and bowels act spasmodically, but he has never lost control of them. His mentality is good except that he has difficulty in concentrating. Face smooth on the left side, right eye twitches. Left palpebral fissure narrower than the right. Left pupil smaller than the right, but both react to light and accommodation. Sensation of temperature, touch and pain intact in both sides of face and neck. Temperature and pain sense almost entirely lost below clavical and spine of scapula on left side and below the fourth rib, and inferior angle of the scapula on the right. Cold is distinguished more readily than heat. Touch is also lost in the left hand, forearm and lower half of arm. Some areas, such as left foot and leg, are sensitive to pain. There is coarse muscular twitching in both arms and shoulder girdle muscles. Smell, sight and taste are normal. Abdominal reflexes active. Cremasteric very weak. Patellar and Achilles reflexes markedly exaggerated. Ankle clonus very marked. Babinski absent. Marked atrophy on left hand and forearm, especially thenar, hypo-thenar eminences and first and second interosseal, as well as deltoid supra and infraspinati, right less so. Left leg generally atrophied. Left forefinger shows extensive old scar. Left arm and leg shows spasticity and paresis. Muscles sense present everywhere except left hand and wrist. Dorsal spine shows curvature with convexity to the left. The case was regarded hopeless, since it is now definitely established, that the disease is due to a progressive gliosis of the tissues around the central canal of the spinal cord and extending more or less in the anterior and posterior horns.

The meeting adjourned to meet Thursday evening, April 30.

EL PASO COUNTY.

The El Paso County Medical Society met in regular session at the Antlers hotel in Colorado Springs, April 8, at 8:15 p. m. There were twenty-six members and two visitors

present. The president, Dr. Chas. O. Giese, presided. The minutes of the last regular meeting were read and approved.

The application of Dr. Frank W. Acker of Manitou for membership in the society was read and laid over until the next meeting for action.

Dr. O. R. Gillett and others discussed the advisability of a municipal hospital for the care of contagious diseases. After considerable discussion it was moved, seconded and carried that a committee of three be appointed by the chair to investigate this proposition and report at the next meeting of the society. The following committee was appointed: Drs. W. H. Swan, J. J. Mahoney and C. S. Morrison.

The following resolutions on the death of Dr. Pliny H. Perkins were adopted by the society:

Whereas, Dr. Pliny H. Perkins has been removed from among us by death;

Whereas, Dr. Perkins has been a credit to the medical profession and especially to the El Paso County Medical Society; therefore be it

Resolved, By this Society:

First, That we deeply deplore the loss we have sustained in the death of Dr. Perkins;

Second, That we convey to his wife and mother our sincere appreciation of his attainments as a physician and surgeon, his sympathetic and charitable attention to the sick and afflicted coming under his care, and the generous manner in which he gave his services to all who called upon him;

Third, That a copy of these resolutions be conveyed to his wife and mother and also spread upon the minutes of this meeting.

B. B. GROVER,

A. C. MAGRUDER,

G. B. GILMORE,

Committee.

Dr. B. B. Grover read a very exhaustive and well prepared paper on "Nerves and Pain," illustrated by numerous original color drawings. This paper was discussed by Drs. Martin, Swan, Magruder and Boyd.

Dr. O. R. Gillett demonstrated the use of the lungmotor which is kept at the police station in the city hall to be sent out with the police ambulance on emergency calls.

There being no further business before the society, it adjourned to the dining room, where lunch was served.

GEORGE B. GILMORE, Sec'y.

PUEBLO COUNTY.

The Pueblo County Medical Society met in regular session April 21, 1914, being called to order by President Singer. There were twenty-two present.

The minutes of the previous meeting were read and approved. Dr. Rich presented the paper of the evening on "Cystoscopy" and the discussion was opened by Dr. Alcock. The paper was a most excellent one and proved very interesting and instructive.

A communication from Congressman Keat-

ing regarding the bill removing the Surgeon General's library was read and filed.

Dr. H. G. Vogt was elected to membership.

A bill of \$2.75 was allowed for stenographic work. The society then adjourned.

J. H. WOODBRIDGE, Sec'y.

TELLER COUNTY.

The regular monthly meeting of the Teller County Medical Society was held on Tuesday evening, April 28, in the committee room of the Elks' Club, Victor. The following physicians of the county were present: Drs. King, Thomas, Hassenplug, Elliott, Schoen, Vivian, Dunwoody, Hereford, Brinton, Jones, Hayes, Howard and McIntyre.

The guest of the society was Dr. Philip Hillkowitz of Denver, who gave interesting talks on the Wassermann test and the theories of Abderhalden in regard to his tests for pregnancy and carcinoma.

The society was then royally entertained by the Victor doctors in the form of a banquet at the Antlers café.

THOS. A. MCINTYRE, Sec'y.

LAS ANIMAS COUNTY.

The Las Animas County Medical Society met in regular session May 1, 1914. The following members were present: Drs. Presnall, Beshoar, Richie, Scannell and Ogle.

The club rooms being closed, the meeting was held in Dr. Ogle's office. Dr. A. J. Chisholm's name was proposed for membership and on motion the rules were suspended and he was duly elected a member. The secretary read a letter from Dr. O. M. Gilbert, president of the State Medical Society, urging that as many as possible would attend the coming meeting of the American Medical Association. Also a letter from headquarters in Washington, of the National Red Cross Society, asking the local representatives of the society to send a list of names of medical men who would volunteer for Red Cross service in connection with the United States army if needed in the Mexican tangle. By vote of the society the secretary was directed to correspond with the individual members on this subject.

There being no further business the society adjourned to meet June 5.

A special afternoon will be set aside at the state society meeting, for the report of clinical cases; time for report seven minutes. Those who have cases that they would like to report should at once notify Dr. Aubrey H. Williams, Metropolitan Building, Denver.

Volunteers are now called for, for the program of the state society. Report at once to Dr. Aubrey Williams, Metropolitan Building, Denver.

New and Non-Official Remedies

Since publication of *New and Nonofficial Remedies*, 1914, and in addition to those previously reported, the following articles have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association for inclusion with "New and Nonofficial Remedies":

Scarlatina Strepto - Serobacterin, Mulford (Immunizing).—A sensitized scarlatina streptococcic vaccine, sold in packages containing three doses of killed sensitized streptococci. (The Council has at present no means for determining the identity and purity of serobacterins and these must therefore be used on the guarantee of the manufacturer, alone.) (Jour. A. M. A., April 11, 1914, p. 1168.)

Phenolphthalein-Agar.—Phenolphthalein-agar is agar-agar impregnated with phenolphthalein, 100 gm. containing 3 gm. of phenolphthalein. It has the properties of agar-agar augmented by those of phenolphthalein. The Reinschild Chemical Co., New York. (Jour. A. M. A., April 11, 1914, p. 1168.)

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PNEUMONIA.

The apparently increasing mortality from pneumonia of late years is noticed by S. Solis Cohen, Philadelphia (Journal A. M. A. July 12), who calls attention to a treatment with a much reduced mortality, systematically carried out in two hospitals, the Jefferson and Philadelphia General Hospital. Apart from fresh air, dependence has been placed first on the effective use of massive doses of quinin. The most potent preparation, namely the very soluble double chlorid of quinin and urea introduced intramuscularly in a 50 per cent. solution. Second, the hypodermic

injection of cocain hydrochlorid solution, or of an extract of the posterior lobe of the pituitary body for the maintenance of blood-pressure. Third, in cases of prolonged fever, delayed resolution or tardy convalescence, the injection of bacterins (pneumococcus or "mixed" vaccines, personal or stock has been resorted to to expedite recovery and apparently with good result. Further experience is needed, however, before positive statements can be made. The details as to the administration of the remedies are given. The dosage of the quinin salt is from 15 to 25 grains and 15 grains every third hour after, till temperature falls and stays down below 102.2 F. One-half grain of cocain hydrochlorid or of caffen (sodiosalicylate) or 1 c.c. of pituitary liquid or 1 c.c. of the 1:1000 solution of the posterior pituitary principle is given with the first quinin dose and repeated likewise every third hour until the systolic blood-pressure curve in millimeters of mercury taken in the arm rises and remains above the curve representing curve frequency in beats per minute. No invariable maximum limit has been fixed to the number of injections of quinin or pressor substances, but it has not been considered best to continue them beyond the first twenty-four hours and rarely as long as this. Where the desired effects have not been reached by that time, the interval between injections has been increased to six hours. In general the idea is to give as much quinin as can be borne in the first forty-eight hours and as little of the pressor drugs as is needed to maintain the systolic blood-pressure a safe distance from the pulse-rate. These directions apply to moderately strong adults and the good results are shown in three tables. Until recently this treatment was reserved for cases calling for active intervention and other patients were permitted to go without it. Statistics are based, therefore, on cases from the moderately severe to those of the very worse type. At present the author gives the first dose of quinin to every patient and the result has been that the cases have become so much milder that they require no further treatment, beyond good nursing. As regards the duration of this treatment the quinin is seldom continued beyond seventy-two hours and the number of injections ranges from one to fifteen and is ordinarily five or six, usually of about 1 gm. each. The number of cocain and pituitary injections ranges from one to twenty and will average three and four in each case and each case must be judged by itself. The only general rule is, enough to produce the desired effect and no more.

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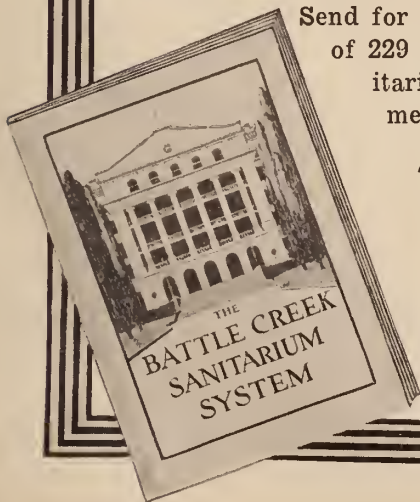
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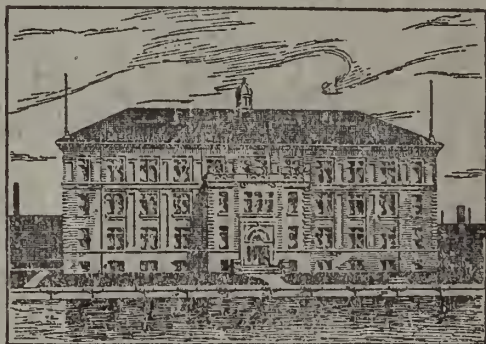
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Editorial Comment

NOGUCHI AT OUR NEXT STATE MEETING.

It will come as a most agreeable surprise to the members of the Colorado State Medical Society to learn that Hideo Noguchi is to be the guest at our annual meeting.

To have a man devoted to pure science address our yearly gathering bespeaks, in a way, the elevated scientific plane on which our membership stands. It has often been remarked by outsiders, and we should not be accused of vanity if we quote it, that the medical profession in Colorado is, to say the least, the equal of that of any state in the Union. We are not satisfied with a mere bread-and-butter routine of existence. Far from falling into the monotonous rut of daily practice, the majority of our membership are close students of the advances made in medicine, and some of the more gifted among us are doing their share in promoting medical progress.

There is no doubt, therefore, that Doctor Noguchi will have an appreciative audience. He is already well known to us from his work in the Rockefeller Institute. His name has become a shibboleth in the sero-diagnosis of syphilis. Not content

with the Wassermann reaction, the physician also desires a Noguchi. It is probably superfluous to state here that by substituting human blood corpuscles instead of sheep's and by the employment of an acetone insoluble antigen, Noguchi has eliminated some serious errors that were apt to creep into the original Wassermann reaction.

His ingenious method of cultivating the *treponema pallidum* artificially in pure culture by devising a special medium for its growth was the first successful effort to close the chain of evidence for this microorganism as the cause of syphilis, in that it fulfilled the postulate of Koch that a germ must be cultivated artificially before final proof is had of its being the cause of a given disease. The artificial cultivation of the spirochete was also of service in differentiating this microorganism from the morphologically similar spirochete dentium often found in the normal or non-specific oral cavity.

To prove the causal relationship between syphilis and paresis, Noguchi made his epochal research on brains of paretics, in a number of which he demonstrated the presence of the *treponema*. The patience and exhaustive research this work required attests the indefatigable energy of this man.

And withal, Noguchi is a very modest gentleman, and for one so occupied in his

many labors, extremely kind to those who visit him at his laboratory, in pointing out new wrinkles in some method or the peculiar smell of a culture of a new variety of spirochete.

The value of an address at our meeting from a scientist of the stamp of Noguchi does not end with the duration of his visit. While the message he will tell us will undoubtedly prove interesting, the stimulus of his presence among us will be far more enduring.

THE FULL-TIME PROFESSOR.

Dr. Theodore C. Janeway has been appointed to a full-time professorship of clinical medicine in Johns Hopkins University. In accepting this appointment he has, of course, had to resign his occupancy of the chair of medicine in Columbia University and a very lucrative practice in New York. In taking this course Doctor Janeway exhibits an admirable enthusiasm for the purely scientific aspects of medicine. It is this spirit that has led him on to success as an internist and induced the Hopkins authorities to consider him in their search for the best men to elevate the standard of a school already at the pinnacle of medical schools.

The appointment of Doctor Janeway has opened anew the question of the advisability of employing medical professors on full pay and limiting their energies to the teaching of medicine. Opinions about the matter are, no doubt, greatly influenced by prejudice. To comply with such a program imposes a great financial hardship which but few schools can bear.

The changes which have been working in American medical education are encouraging. Looking backward one may observe that every improvement has been resisted by conservatives who could find plausible argument for their cause. Any illustrious physician who could not have

met the present admission requirements to our medical schools seemed to furnish an example of the misfortune which might befall society by raising the entrance standard. There was, for instance, John Hunter, the barber's apprentice, unschooled in his youth, but in manhood one of the greatest of his profession. The poor boy was always with us. His opportunities did not permit of the preparation required. He was better served by a school near home that would allow of his boarding at his mother's table.

The New York Medical Record calls the Johns Hopkins plan "a doubtful experiment." The editor of that journal admits that laboratory branches should be taught by men who devote their time exclusively to such teaching. He thinks, however, that the anticipation of a fee is a stimulating influence for good in clinical work.

These laboratory branches, even in the difficult subjects of immunity and biologic chemistry, have furnished us with the greatest output of discovery in the last few decades. It is, then, exactly these men who do not anticipate fees who have done for us what the man with twenty calls a day has never done.

It may not be necessary for a medical school to claim all the time of a teacher. It is necessary for it to be able to command as much of the teacher's time as instruction in his particular branch requires. How much this may be will be shown by the extreme experiment of Johns Hopkins compared with the part-time employment of teachers which other schools will be compelled to inaugurate.

The teacher whose work is designed for service rather than for ornament will do much to improve the moral relation between the student and his prospective profession. The didactic lecture, so easily prepared, so smoothly delivered and so soon forgotten, can do no more than furnish a hazy conception of the things under

consideration. It is the example of the teacher in actual, serious, patient work that gives the student correct ideals of his future relation with his patients. The hurry, carelessness and irregularity which attend gratuitous service encourage slovenly habits in the student. Besides the advantage of improved instruction, there accrues, from the compensation of teachers, the influence of high example.

Original Articles

THE SURGICAL TREATMENT OF THORACIC EMPYEMA.

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The subject chosen needs no apology. Empyema is a common sequela of the various pulmonary and thoracic infections, and its neglect or improper treatment, often spells permanent physical impairment or mutilation to the unfortunate individual so afflicted.

Empyema thoracis is a pyogenic infection of the pleura, which may arise through an open wound, or by means of infection conveyed to the pleura through the blood current. It also occurs secondarily from infection reaching the pleura from a neighboring focus, such as pneumonia or abscess of the lung, subphrenic suppuration, mediastinal infection, or an infected focus of the chest wall.¹

Most cases of empyema begin with an exudate of clear serum into the pleural cavity, this exudate later becoming purulent. Finally the pleura becomes thickened and covered by a more or less extensive fibrous exudate, and if not arrested at this point eventually becomes an organized fibrinous capsule to the lung. The pus may occupy the entire

pleural cavity, or it may limit itself to one portion only, especially where it is walled off by adhesions.

In order to appreciate the physiology and mechanics of the chest wall and pleural cavity, three important points must be considered: First, an unyielding non-collapsible parabolic cylinder the chest wall, enclosing a negative pressure space—the pleural cavity.

Second, an impervious sac, the lung, suspended from the dome of this negative pressure cavity, and connected with the outside positive pressure by way of the trachea. This intrapulmonary positive pressure maintains a moderate distension of the lung so long as the pleural cavity remains unopened and free of fluid; but the loss of continuity of the chest wall will overcome this negative intrathoracic pressure and destroy the normal equilibrium of pulmonary function.

Third, the excursion of the diaphragm and thoracic muscles, causing an increase or decrease in the amplitude of the thoracic cavity, produces a compensatory expansion or contraction of the lung, this in turn creating the regular inflow and outflow of intrapulmonary air.

Empyema is not a simple abscess in the ordinary sense, consequently the tube drainage which is applied for the removal of the foreign matter, does not fulfill all the requirements necessary to quickly restore the normal intrathoracic balance; for although the introduction of drainage tubes into the thoracic cavity is absolutely necessary to the removal of the pyogenic material, their introduction also adds embarrassing complications, the elimination of which is necessary before a satisfactory recovery is obtained.

First of these complications is the loss of the intrathoracic negative pressure, and this immediately provokes pulmonary collapse, which collapse invariably

¹Keene's Surgery, Vol. 111, page 530.

remains until the negative pressure is restored.

Second, adhesions, chronic thickened pleura, cicatrices and fistulous sinouses, are consequences of the prolonged use of drainage tubes, for these tubes are nothing less than foreign bodies in the pleural cavity in the presence of infection.

Third, when a lung remains collapsed in the presence of infectious material, the granulating pleural surface rapidly becomes converted into a thick, fibrous contracting capsule, which firmly compresses the pulmonary tissue and obliterates the air vesicles. Even though the thoracotomy incision heals over and the pleural cavity is once again restored to its normal negative pressure, (so called chronic pneumothorax) the lung cannot again expand until this enveloping fibrous capsule is severed. After this has been done the lung will often unfold and considerable pulmonary function be restored, although the extensive operative measures necessary to accomplish such results are decidedly dangerous.

Fairly good results are reported by prominent surgeons with the decortication methods of Dr. Lorne and Lund's modification, yet most of these advanced cases are obliged to have some form of compensatory depression of the bony chest wall, which means deformity for the patient.

Recent successful invasion of the thoracic cavity has been made possible by the discovery and application of certain physiologic principles, among which are the necessity for constant lung inflation rather than compensatory depression of the thorax, and the rapid establishment of a negative pressure in the thoracic cavity by air-tight closure of the chest wall after the elimination of fluid and adhesions.

Some ten years ago in an interesting series of original experiments in thoracic

surgery on the dog, the writer found that following radical invasion of the pleural cavity, and even in partial pneumonectomies, the pneumothorax was rapidly dissipated if the chest wall was effectually sealed by overlapping tissue flaps, and the bronchioles sealed, providing no infection followed.

To secure and maintain lung inflation, however, it is necessary to have a constant positive intrapulmonic pressure, and one of the recent means of securing this is by the Meltzer-Auer intratracheal insufflation.

This accomplishes a very satisfactory pulmonary ventilation without the use of the thoracic muscles, but the method is only practical for short periods of time, and while the patient is under anesthesia.

The Sauerbruch cabinet, which increases or decreases atmospheric pressure at will, has also proven its value in intrathoracic problems, but neither of these methods are practical when applied to surgical problems of the thorax which cover protracted periods.

These necessitate the application of special methods, the object of which is to secure the physiologic norm in the shortest possible time, striving always to keep the thoracic cavity free of pus, debris and adhesions, as well as maintaining lung motility and expansion. Some four years ago the writer published a method of treatment based upon these lines,² and since has found no reason to modify it, although adding the use of the cystoscope for the purpose of illuminating the cavity and locating certain obscure adhesions and pus pockets.

The first physical evidence of pleural infection is serum. If we are fortunate to reach a case at this stage, the simple method adopted by Murphy of puncture and injection of glycerine and 2 per cent formaline, is the most successful means of

²Annals of Surgery, Vol. 51, page 84.

arresting the pyopneumothorax. The writer prefers, however, to first syphon off the serum content before injecting the glycerine-formalin compound. This is easily done by first introducing a small trocar over the lower portion of the dull area until the fluid is reached, then passing a smaller needle through the non-collapsible wall of the trocar and producing suction through the needle. The fluid will escape through and around the needle without its becoming blocked with soft tissue. By measuring the quantity of serum evacuated, there can be a reasonable determination of the amount of glycerine formalin compound needed, which can then be injected through this same puncture. It is seldom necessary to repeat this simple operation.

When the needle puncture discloses a definite pus pocket, then good and sufficient drainage should be secured; and this can only be obtained by ample thoracentesis, and the use of at least two large drainage tubes of about half-inch diameter to the lumen, this in order to quickly and effectually empty the contents of the cavity. In the adult the resection of a portion of one rib, about two inches, is sufficient to allow of ample spread of the soft parts for the large diameter tubing. The site chosen for the resection should be well over the dull area and near the lower margin. This work can be fairly executed under local anesthesia, although as a rule I prefer the light general anesthesia.

When doing a rib resection, the patient should be placed in the sitting posture, at an angle of 65 degrees, and the back should be supported by the table, rather than increase an already embarrassed respiration by placing the patient in the horizontal position with the sound side underneath. The arm on the involved side should be brought forward and supported by an assistant.

The drainage tubes are kept free from the fibrinous plugs, by the use of a six or eight-ounce syringe, which is applied to the tube openings twice daily and suction induced until, by the release of air it is evident that the tubes are free.

About the fourth or fifth day after the operation a large hyperaemic cup is used. This is sufficiently large to cover the tubes, the opening and about two inches of the margins of the wound, and is applied two or three times daily for a period of at least twenty minutes at each sitting, the patient in the meantime being instructed to take deep inspirations and cough. This exercise of the chest muscles does much to obliterate the dead pleural space, at the same time emptying any undrained pus and breaking up the fresh adhesion bands.

Not later than the eighth day all drainage tubes should be removed, the same suction hyperaemic cup being continued but applied more frequently each day. In fact, this apparatus may be strapped in position and the patient instructed regarding its use during the ambulatory convalescent stage.

It is surprising how quickly the margins of the wound freshen under this hyperemic treatment, and how rapidly and effectually they heal. Usually an acute empyema without bronchial openings will permanently close with good lung expansion, and obliteration of the pyogenic space by the end of the third week.

In case the opening should have closed and recurrence is marked by temperature and distress, one will usually find a circumscribed pocket of pus located somewhere near the drainage tract and between the fibrous bands connecting pulmonary and perietal pleura. A curved, soft metal inteauterine probe passed along the perietal chest wall, after piercing the soft new connective tissue, and

then directed into the pus pocket, will release the pus which is readily drawn to the surface by the hyperaemic cup. Usually no further complication follows.

Lund of Boston has, within the past three years, modified the original decortication operation of De Lorme, and reports a series of cases with good results. Beckman of the Mayo Clinic in a recent personal interview, reported some eighteen advanced cases in which the De-Lorme-Lund decortication operation was done with good results. But notwithstanding these favorable reports, there remain many reasons why every effort should be made to curb these empyemas during their acute stage.

612 Empire Building.

³Journal A. M. A., Vol. 51, page 693.

THE ART OF OBSTETRICS AMONG PRIMITIVE PEOPLES AND ITS DEVELOPMENT AMONG CIVILIZED CLASSES.*

BY C. B. INGRAHAM, M.D.
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Eve came from the rib of Adam, and, according to Simpson, in his defense of the use of anaesthetics in labor, to the clergy, we have a record of the first use of an anaesthetic during delivery, for "the Lord caused a deep sleep to fall upon Adam; and he slept; and he took one of his ribs and closed up the flesh instead thereof," Genesis ii, 21. Athena sprang from the forehead of Zeus, so it is written, but in all other instances woman has borne the burden of labor, and according to her time and civilization, has been variously dealt with and treated.

I will ask your indulgence tonight during a short presentation of this ethnological subject. It has furnished a large and

very interesting amount of literature, and this sketch must, therefore, through necessity, be very incomplete.

PREGNANCY.

Almost all of the savage races make little distinction between the pregnant and the non-pregnant woman. They are made to continue their duties and work up to the time of labor. The Andamenese and Wakamba of Africa and our American Indians are examples. As soon as we come to a more sedentary population, however, such as the Pueblos or the natives of Mexico, we find that they are more considerate. No over exercise is permitted, warm baths are frequently taken and the abdomen is regularly kneaded, in order to correct the position of the child. A transverse position among savage women is a great danger. If labor is inaugurated with the child in this position, death is almost certain.

The old histories tell us that in Mexico, although coitus was ordered to a certain extent, that the offspring might not prove weakly, too frequent yielding to the husband's desires was forbidden. The Burmese women wear a tight bandage about the abdomen after the seventh month to prevent the ascent of the uterus, with the idea that the higher the child in the abdomen, the further it must descend in labor. In Japan, the midwife binds the abdomen after the fifth month, the cloth being worn until labor begins. Frequent bathing is common among the pregnant women of the higher castes of India.

Here and there some preparation is made to ease the intensity of labor. Upon the Isle of Jap, in west Micronesia, they begin to dilate the os at least one month before delivery is expected. The leaves of a certain plant are tightly rolled, inserted into the cervix, and moistened by the uterine secretions, they distend the os, when a fuller roll is inserted. We see here the principle of the Laminaria tent.

*Read before the Denver Medical Historical Society, April 16, 1914.

While it would tend to make labor easier and shorter, why it does not cause premature birth it is hard to understand.

The Japanese, as well as the Mexicans, knead and massage the abdomen to correct positions. Whether the diagnosis of malposition is made or not, in many instances the position is thus rectified.

It is not until rather recently that we have had a correct idea of the position of the child in utero. In Roesslins Rosengarten, written in 1513, it was believed that the child might assume any imaginable position, the number being limited only by the imagination of the writer. Even as late as 1775 Baudeloeque distinguished ninety-four different positions.

Though crude forms of abdominal palpation were probably practiced from earliest antiquity, just as the Aborigines still employ it, it was not until 1776 that Roederer first pointed out its advantages. Its practical importance was not recognized until over a hundred years later (1878), when Pinard published his work upon the subject, and the method became popularized in France.

How the child is formed in the mother's womb, how plants come forth from seeds, are questions that have occupied the thoughtful mind for thousands of years. The classical works of Aristotle are the oldest known scientific sources of embryology. Haeckel writes that: "Naturally, many fables and errors were mixed up with them, but they give us a list of interesting facts, not fully appreciated, and to be discovered afresh in our day." During the long space of the next two thousand years the slumbering science made no progress. In 1600 the Italian anatomist, Fabrius ab Aquapendente, published, at Padua, the first pictures and descriptions of the embryos of man. As you know, all these older scientists believed that the complete body, so minute that it could not be detected, with all its parts, was

contained in the ovum of animals, and that development was but a growth or unfolding (the "preformation theory"). Next came the curious "theory of scutulation." It was thought that the outline of the entire organism, with all its parts, was present in the egg. The ovary of the embryo was supposed to contain the ova of the following generation; these again the ova of the next, and so on ad infinitum. Haller thus calculated that God had created together, 6,000 years ago, the germs of 200,000,000,000 men, and ingeniously packed them all in the ovary of our venerable Mother Eve.

With the discoveries of Wolff came the "theoria generationis," then Bair's discoveries, and gradually our present knowledge of this still incomplete science.

The world over, the moon is associated with the menstruation of women. In France in past centuries the monthly flow, and in Germany the monatliche reinigung was called the tribute which woman renders the moon. The earlier observers supposed that conception could not occur without menstruation, and that the flow represented the female semen. This idea was next abandoned, and the process was considered one of purification.

The idea of cleansing and purifying at this time has been almost a universal one. The natives of Africa and India consider the female as unclean and isolate her in a separate hut. The still natural people of Asia, in order to distinguish her, oblige the menstruating woman to wear well-marked colors when she mingles with others.

Galen supposed that labor resulted from the gradual dilatation of the cervix, brought about by pressure of the presenting part, and the view still has numerous adherents. That birth is a voluntary matter upon the part of the child is an idea which prevails among certain peoples. The Chinese believe that

pregnancy can last two or three years, because the child does not wish to leave the womb, and even in a legal Mussulman treatise, it is stated that the maximum term of gestation may attain four or five years. In France the time is not long past when the cause of labor pains was looked upon as a desire of the child to change its condition of life.

Among the Pahutes, after a given length of time, say nine moons, or the lapse of certain seasons of the year, the child is to be starved out of its maternal quarters, hence for weeks before the expected date, a fast begins with the mother. They act upon the presumption that the child is nourished from her, but also believe that fasting reduces the maternal tissue over the genital organs and opens a wider door for the voluntary exit of the fetus. In certain Persian villages birds are let loose from cages and school children are dismissed while labor is progressing, apparently to afford quiet to the sufferer.

The induction of abortion is an operation which dates from most remote antiquity. More or less accurate directions for its performance are to be found in the earliest writings upon medicine. It was so extensively practiced in Rome that Plautus repeatedly referred to it, while Juvenal and other secular writers mentioned abortion as an every-day occurrence. With the spread of Christianity it came to be considered as criminal, excepting as a last resort to save the mother's life.

Among the truly primitive peoples abortions are not numerous. It is with those in closer contact with civilization that laxer morals prevail, and among some of our Indians we find abortion quite frequent. Engelmann writes that some tribes have a reason for it, in that women bearing half-breed children have such difficult labors, because of the increase of

the size of their babies, that their lives are endangered.

In old Calabar medicines are regularly given at the third month to prove the value of conception, three kinds being deemed disastrous; first, if resulting in twins; second, in an embryo which dies in utero; third, in a child which dies soon after birth. If pregnancy stands the tests of the medicines given, it is considered strong and healthy, and if the ovum is expelled it is one of the three. They first give medicines by the mouth and rectum, and then, if a bloody discharge followed the first doses, they apply them to the os. The measures are so severe that not infrequently constitutional disturbances result or even death is caused.

It seems strange that there is no record of auscultation of the fetal heart until 1818, when it was first heard by May of Geneva. Lejumeau de Kegardec recognized it independently in 1821, and to him we are indebted for most of our information upon the subject. He was listening for splashing of the fetus in the liquor amnii. Subsequent investigators have revealed little with which he was not familiar. I have found no record of auscultation among the primitive peoples.

Previous to the studies of Andreas Vesalius, 1543, it was generally believed that birth of the child could not be affected until the pelvis had increased in size by the separation of the bones. Realdus Columbus and Julius Caesar Arantius made further studies upon this subject, but in spite of the teachings of these three great anatomists, they did not exert as great an influence as might be expected, for Ambrose Paré, the great obstetrical authority of his day, still maintained that the bones separated, and promulgated this theory in his writings. Heinriche van Deventer was the first obstetrician to make a thorough study of the anatomy of the pelvis, but in his "New Light for Midwives" (1701),

apologizes for considering what apparently is so useless a subject.

LABOR.

Among the primitive peoples labor is said to be short, easy, with few accidents, and followed by little prostration. According to Engelmann, the squaw of the Modoc Indians, a tribe but little affected by the advance of civilization, suffers but an hour or even less. The Sioux is a little longer in labor, two or three hours, two hours being about the average time among the North American Indians. With the natives of Africa and of Southern India, and the natives of the Australian Islands, the period of pain is very much the same. As civilization is approached, the time is prolonged, and we find that the half-civilized Mexican Indians require from three to four hours for delivery.

The active and muscular, out-of-door life of these primitive people and the slightly smaller size of the babies are the factors as regards this easy labor. We see occasionally strong, hardy women in our cities and rural districts who pass through labor easily, and so imitate their savage sisters in this respect. They are, however, far too rare. That there are few accidents among savages is most fortunate, for, save for the incantations of the medicine men, they have no ways to combat them. Engelmann writes that among the women of the Green Bay Indian Agency, many deaths take place, not from monstrosities or deformed pelvis, but to malposition and because a great number of half-breeds is to be found among them, with a resulting disproportion between the child and the pelvis.

The Papagos and some other tribes have a philosophical way of regarding accidents in labor; they think the character of the fetus has a good deal to do in causing the obstruction, and deem it better for mother and child that both should perish than that so villainous an offspring should

be born and grow up to do injury to his people.

But few of the primitive people ever manipulate within the vagina. The introduction of the hand into the vagina, unless in a few instances for the purpose of distending the perineum or removing the placenta is unknown. The prolapse of an arm is managed among the Nes-Perces, and undoubtedly among other tribes just as by some of our midwives, by pulling upon it, as they do upon any part which may present.

No attention is paid to the perineum, and rupture is probably frequent. An attending squaw among the Dakotas overcame the rigidity of the perineum by inserting her hands within the vulva, palms together, forcefully spreading them apart. Prolapse of the uterus is not unusual in Mexico, and in the interior of Russia, through tears and traction on the cord, it is so common that the people are prepared to meet it. The sufferer is stretched upon a slanting board with the feet higher than the head, and is successively raised and lowered in order to shake the uterus back into the pelvis. In Syria some attempt is made to protect the perineum.

It is interesting to know that it was not until Gifford, in 1733, called attention to the advisability of attempting to prevent perineal tears, that this subject was given any consideration among educated people. One reason why this department was so neglected was because the women were delivered beneath sheets where there was no opportunity for inspection of the parts or of determining what damage had been done.

Commonly labor is conducted most privately and quietly; the Indian squaw is wont to steal off into the woods, alone or accompanied by a female friend or relative, where, upon the bank of a stream, the favorite place, so that she may bathe herself and her child, she accomplishes the

act and returns to the village. This is true of the Sioux, the Apaches, Cheyennes and other of our Indian tribes.

In many tribes it is customary to set apart a hut or lodge for this purpose. On the Sandwich Islands, on the contrary, the confinement is public, and is witnessed by all who happen to be about. The same lack of privacy prevails among the Mohammedans of India.

In Siam, parts of Africa and South America, the Canadian Indians, some of our own—the Cheyennes, Arapahoes and others—have no assistants present during labor, or there is just a female friend or relative. There is no class corresponding to the midwife.

Since time immemorial, with all peoples, the proverbial old woman has been the attendant in labor cases where an assistant is needed. Their qualifications were then as now—age, and the number of women they had attended. Each village or settlement of the savage tribes of vast Russia has its old crone, who by second sight or other means, drives away evil spirits, haunts the lying-in room, and causes much harm by her ill-timed manipulations. In Syria the assistant is an old woman who learned the trade from her mother, who was a midwife before her. We find them in Japan and India. In ancient Egypt difficult cases were attended by surgeons especially skilled in midwifery. It will be remembered that the Egyptians had their specialists in those days.

Among the primitive people the attendant does little other than receive the child. The most reasonable of all their means of assistance is the steady compression of the abdomen. All resort to compression in one way or another. The Finns, in tedious cases, use a tight belt or hold the woman up and shake her as they would a pillow out of its case. Shaking is also a last resort with the Mexicans. Fright is some-

times used to bring about expulsion when the head is on the perineum. A gun is discharged or the patient is suddenly startled in some way. The savage tribes rarely make use of herbs or roots in labor, though among some their use is common. In Mexico there are midwives who are acquainted with herbs and their properties.

The Yi of India, the Dye of Syria, the hag of Mexico, the midwife of the Bible and many of those of today are evidently much the same in their qualifications, education and knowledge.

It was not until the beginning of the seventeenth century that the prejudice against having men in attendance upon labor cases gave way to reason. Up to this time educated accoucheurs were called only in extraordinary cases, usually as a last resort. Their appearance usually meant an operation, which only too often was synonymous with death of both the mother and child. It is not strange, then, that men midwives were looked upon with dread. The initiative, in this line, was taken by Louise Bourgeois, the physician of Marie de Medicis. A little later Mauriceau published his treatise on pregnancy, and at about this time the Chamberlains invented their obstetrical forceps. Gradually the opposition was overcome, though those who took up this work met with much ridicule and comment.

Rigly, Ploss, Engelmann and others have written extensively upon the posture assumed by the women of different races while in labor. So great do the advantages of posture in childbirth seem to be that people cling to this custom more firmly than to any other of their traditions. The recumbent position is one but rarely taken by women of the savage tribes. Engelmann writes that "they are governed by instinct and not by prudery and laws of obstetrics. It will be found that the civilized women when she loses her self-control, forgets the admonition of

her physician, and will raise herself on her elbows or cling to the neck of one of her attendants, this semi-recumbent position often proving of distinct advantage."

The Sioux Indian stands erect, the Hindoos in the vicinity of Madras are delivered erect, supported by an assistant at either shoulder. In the Philippine Islands this position is sometimes seen. Among some races the position of partial suspension is used; they cling to the neck of their husband or an assistant or hang on to a rope or branch of a tree. In some portions of Finland and of Russia, the woman clings to a crossbar and attempts to shake the child out. Apropos of shaking, the Syrians, who usually permit their patients the comforts of the obstetric rocking chair, toss them in a blanket if the labor becomes tedious. The Siamese, when in a difficult labor case tramping on the abdomen is not successful, will suspend the patient by means of bands beneath the arms.

Among native Australians it is stated that the woman sits upright, the weak only lying down in labor. Squatting is very common. It is seen often among our Indians, and it is said that the Irish are familiar with this most natural position.

Sitting in a semi-recumbent position is one of the commonest, most ancient and possibly one of the most advantageous obstetrical positions. The semi-recumbent position was customary in Greece 2,200 years ago, as is proven by an interesting marble group discovered among the debris of the temple at Golgoi. It represents a labor scene just finished. The woman is reclining in a chair, leaning against an assistant, while the midwife sits in front. This piece was discovered by General di Cesnola during his researches in Cyprus, and it is said the modern Cypriote midwives possess similar low chairs which they carry with them for cases of childbirth. The antiquity of the position is

also proven by a passage in Genesis (xxx, 3), which says that the Hebrew women were confined upon the lap of an assistant. Sitting on the lap between the thighs of an assistant, who often makes pressure with hands over the fundus, is so common that it is undoubtedly known to you all. It is almost identical with the position assumed in the obstetrical chair, though more ancient.

The earliest known reference to the obstetrical chair is probably by Moschion, in the second century. The passage from Exodus i, 15 and 16, is represented by many writers to indicate that the chair was used by the ancient Hebrews, "When ye do the office of midwife to the Hebrew women, and see them upon the stool, if it be a son, then ye shall kill him." Engelmann believes with Kotelman, however, that the word "ebnaim" means stones, and that the Hebrew women sat upon stones as the Arabs do today. The obstetrical chair which flourished in Greece and Rome was almost forgotten in the darkness of the earlier centuries of the Christian era, but seems to have survived in Italy. From Italy, it found its way across the Alps into Germany, France and England, where in the seventeenth and eighteenth centuries it flourished. There were many kinds, and as obstetricians interested themselves in the improvement of the obstetrical forceps, they also devoted much attention to perfection of this chair. It soon, however, yielded to the modern recumbent position, and was retained only in the rural districts. At the present day it is still popularly used among the natives of the East, and Plose says, among the very people who rarely make use of chairs for sitting purposes.

OPERATIONS.

The primitive peoples, as has been said, made few vaginal manipulations. They occasionally inserted the hand to extract the placenta or to overcome the rigidity of

the perineum, but knew little or nothing of obstetrical operations. They could not deal with malpositions, and complications usually meant death.

Delivery of the child by traction when the feet protrude from the vulva in breech presentations was probably the earliest obstetrical operation. From the time of Hippocrates up to the beginning of the sixteenth century, head presentations alone were considered normal, and hence all the authorities, with the exception of Celsus, advised the conversion of breech into vertex presentations, even though it rendered necessary amputation of the limbs. Cephalic version must therefore have been practiced from most remote antiquity.

After the resuscitation of Podalic version by Ambrose Paré and Jacques Guillemeau, more rational views prevailed, and in the seventeenth century we find Mauriceau advising the method for Podalic version and extraction which is in general use at the present time. It was insisted upon by Louise Bourgeois, and used extensively by De la Motte.

Until the introduction of forceps, Podalic version afforded the only operative means of delivering an un mutilated child. Before this time artificial delivery could be effected only by means of craniotomy or embryotomy, one or either of which was resorted to in nearly every case of difficult labor. Accordingly, the perforator, sharp hook and crotchet were the most important instruments in the armamentarium of the obstetrician. It is interesting that Guillemeau, one of Paré's students, by the operation of Pedalic version, was able to save his master's daughter from dying from hemorrhage, due to placenta praevia.

This society has already listened to a paper on the Chamberlains and the obstetrical forceps. It has always been a mystery why the discovery of this instrument

was not made long before. Crude instruments for extracting the dead child were used in 1112 by Albucasis, and with just the hint this instrument should have given we wait until the beginning of the seventeenth century for the real discovery of the instrument which has eventually saved untold lives.

A great deal of interest centers around the history of the operation of Caesarian section. It was originally asserted that Julius Caesar was brought into the world by this means, and obtained his name from the manner in which he was delivered (*a caeso matris utero*). His mother, Julia, however, lived many years after his birth. We hear of her during his wars, and besides, he was not the first of his name. There is mention of a priest named Caesar, who lived several generations before. As Williams states, the following view would appear to be more plausible: In the Roman law, as modified by Numa Pompilius, it was ordered that the operation be performed upon women dying in the last few weeks of pregnancy, and the "*lex regia*," as it was called at first under the emperors, became converted into "*lex caesaris*," and the procedure itself as the Caesarian operation.

Caesarian section was probably done by the early Egyptians. The operation is referred to in the myths and folklore of European races. Dionysius was cut from the dead Semele. Caesarian section on the living is of more recent date, though it may have been performed by earlier peoples. The first generally accepted Caesarian section was made by J. Trautman of Wittenberg, in 1610, on a case of hernia of the gravid uterus. About 1500, J. Mafer, a swinegelder in Switzerland, had successfully delivered his own wife after a dozen midwives and several barbers had failed, and in 1581, F. Rousset had published fifteen cases, which probably were not extra-uterine pregnancies,

as has been suggested. Rousset's monograph established the operation in spite of the tremendous mortality and opposition of Europe's best accoucheurs. The Catholic Church had much to do with its habilitation, as it gave the opportunity for baptism to the offspring. It very shortly became an acceptable resource in those cases where without it the parturient would most surely die. We owe to Sännger the improvements which have made this operation successful. Previous to his time the mortality was frightful.

Ploss writes that Felkin, in 1879, witnessed a Caesarian section performed by a native in the heart of Uganda. The operator washed his hand and the field of operation with banana wine, the patient being drunk with the same (anaesthetic?). A quick incision opened the uterus, after cutting the cord, and removing the placenta, the os was dilated from above. The uterus was massaged and the peritoneal cavity cleansed by raising the body up, the abdomen closed by pin and figure of eight suture, the wound being dressed with crushed herbs. The temperature remained below 101 degrees, and the wound healed in eleven days. De Lee asks how many centuries these savages must have been doing this operation to have developed such technique.

THIRD STAGE OF LABOR.

In the delivery of the placenta, the untutored people follow the guidance of instinct. With almost all, some form of abdominal manipulation or pressure is employed. They recognize the advantages of vis-a-tergo, as compared with the dangers of vis-a-fronte, and though a few make traction on the cord, this is however done with caution and is usually accompanied with abdominal pressure. How long it has taken the civilized people to recognize the value of this procedure! Up to 1861 the delivery of the placenta was accomplished by traction on the cord or by pass-

ing the hand into the vagina or the uterus. Credé described his method in 1853, and marked a most important advance, in that it has saved the lives of thousands of women. As a matter of history, Jellett has noted that the method, while usually ascribed to Credé, had been practiced for many years previously, 1767, at the Rotunda Hospital in Dublin, and appears to have originated with John Harvie.

Among the natives the third stage of labor is usually short and without accident. Here again they consider posture as important. Many deliver the placenta in the same position they had assumed for the birth of the child, keeping up steady pressure on the fundus. Some apply a bandage or belt to keep the placenta from going further back into the abdomen. They dread such an accident, and its prevention is the ruling idea of their treatment. Kneeling or squatting positions are assumed, and as in labor, shaking out of the placenta is tried with some tribes. The Burmese use the dorsal decubitus and beat on the abdomen, and in extreme cases if this is not successful, will sit or stand upon it.

By some, decoctions are used, many of them nauseating, producing vomiting, to increase the intra-abdominal pressure. The Somali of Central Africa give mutton snout, with the laxative effects of which the uterine contents are expelled. By some blowing into a bottle is tried.

The Makahs, of the Meah-Bay Agency, have no assistance during the birth of the child, but immediately followed this part, skilled help is called for the delivery of the placenta. The patient retains the sitting posture while an old woman works and presses upon the abdomen. They might be called placenta specialists.

The worst custom is among the Cheyennes and Arapahoes, who never wait for spontaneous expulsion, but immediately

make traction on the cord, often so rough as to rupture it. If the placenta does not come easily, however, they will assist by pressure from above.

In the Uintah Valley Agency, the natives drink freely of hot water during the second and third stages. For the delivery of the placenta they have an ingenious device—a pad of cloth is placed on the abdomen and the patient leans forward on a stout stick, so pressing the fundus down.

The Kootenais, in case kneading the abdomen fails, introduce the hand into the vagina, and remove the placenta. They let the patient bleed to a certain extent, and if it exceeds what they think she may safely lose, they give the joint of an unknown root, followed by another in fifteen minutes to a half hour. No reason is given as to why they should not stop the bleeding at once. This is one of the few tribes who seem to understand anything about the manual removal of the after-birth.

The savage people dread an accident in the third stage of labor, and if they are unsuccessful in their efforts to expel the placenta, are at a loss what to do. Usually it is left to undergo putrefaction, and strangely enough, either because of their rugged constitutions and resistance, or the infrequency of the usual pyogenic organisms, cases of pyamia are exceedingly rare. In cases of hemorrhage many throw themselves into a stream of water. The Papagos, when they are unable to extract the placenta, make a strip of buckskin fast to the cord and great toe, letting the mother's sensation of pain be her guide as to how much traction can be safely made. The Japanese and Chinese also either carefully hold the cord or make it fast to the patient's leg, believing that it may ascend into the abdomen.

The treatment of the cord varies among different races. Among the Sandwich

Islanders the child lies on the ground until the placenta is delivered. Among the Comanches and Wichitas the assistant squeezes the blood back into the placenta, after which the cord is cut and tied. The Flatheads, Crows and Creeks cut the cord at once. The natives of Syria wait from twenty to thirty minutes before cutting. The Loangos of Middle Africa cut the cord at double the length of the first joint of the thumb from the child, or it is measured off to the knee, when the child is taken to the fire the funis is steadily pressed by the warm fingers of the attendants, so as to hasten its drying. This is accomplished in about twenty-four hours, when the withered mass is forced off with the thumb nail and burned. It is believed that the child would fall into evil ways if the cord should become food for rats, and while it is still on, no male, not even the father, may see the child.

Superstitions exist as regards the cutting of the cord. The Loangos would use nothing but the edge of the stem of a palm leaf. The natives also recognize the value of blunt instruments, for bruising and crushing to prevent hemorrhage. The Hoopas, Klamaths and other Indian tribes chew off the cord.

Many superstitions and beliefs exist as regards the placenta. The Comanches and other natives have a way of secretly burying it. Many of the Africans bury the placenta, as do the Japanese, who have specially decorated vessels in which it is placed for burial. By some it has been saved and used as medicine for the child. It is said of the natives of Brazil that if it can be done secretly, they will eat the organ.

While a Denver physician was inspecting the insane hospital at Pueblo an inmate approached him and asked: "I beg your pardon, sir, but have you a piece of toast?" "No," replied the doctor in surprise, "but I can get you a piece if you want it badly." "Oh, I wish you would. I'm a poached egg and I want to sit down."—Denver Field and Farm.

ACAPNIA—ITS RELATION TO ANESTHESIA AND SURGERY.

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Carbon dioxide as it occurs normally in the body is an exceedingly beneficial hormone. It exerts a regulative influence on the entire human economy, especially on the respiration, heart and tonus of blood vessels and unstriated muscle fiber. When the CO_2 content of the blood and tissues is diminished the condition is known as acapnia (from the Greek, *kapnos*, meaning smoke, *acapnia* meaning smokelessness; of course referring to the lime-water test of CO_2). The late Prof. Mosso of Turin, in his studies on mountain sickness, came to the conclusion that the condition was due to a diminished quantity of CO_2 in the body, and to which he gave the above name. The subject, however, was first clearly brought before the profession by Yandell Henderson of Yale in 1908, and I am indebted to his writings for some of the facts given in this paper.

Normally, arterial blood contains—

20% by volume of oxygen.

40% by volume of carbon dioxide.

Normally, venous blood contains—

8% to 12% of oxygen.

46% of carbon dioxide.

In comparing the above percentages, it will be seen that there is not much difference between arterial and venous blood, so far as CO_2 is concerned. Many have looked upon CO_2 as a waste product of the body, but as a matter of fact, the gas is utilized physiologically, and is of as much importance as oxygen. In acute acapnia the percentage of CO_2 in the blood may become almost zero.

Causes of Acapnia.—Acapnia is pro-

duced by rapid pulmonary ventilation, the main causes of the hyperpnea being pain, ether anesthesia, excitement, sorrow, fear and rapid respiration as produced in the experimental laboratory. Acapnia may also be produced locally by exposure of the viscera and large raw surfaces. Henderson states the minimum rate of exhalation of CO_2 for exposed peritoneal surfaces is from 0.15 to 0.20 cc. per sq. cm. in the first half hour, or 40 times the rate from the skin.

Pathology.—Acapnia causes the following phenomena to occur:

First—It does away with the normal stimulating influence of CO_2 on the respiratory center, thus occasionally we have failure of respiration during anesthesia.

Second—It causes loss of venous tone or vaso-motor failure of the entire venous system and splanchnic dilatation.

Third—It causes failure of the circulation by allowing a transudation of the fluids of the blood into the tissues, a process like edema.

Fourth—It causes loss of tone of unstriated muscle fiber, especially of the intestines.

Fifth—Excessive respiration with marked acapnia produces apnoea vera; suboxidation then occurs and an asphyxial acidosis results.

Sixth—Hyperpnea of some minutes duration produces analgesia in the entire body, the modified gases of the blood probably causing the condition by changing the normal relationship of cell constituents, thus causing a partial inhibition of cell chemism. This is the well-known Bonewill-Hewson method of analgesia by rapid respiration, often used by dentists.

Henderson claims that acapnia is the primary cause of shock, and the theory is one to be taken into account in regard to the shock problem. However, the well-known shock of Crile (exhaustion of the

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vaso-constrictor center from direct afferent nerve assault) is without doubt a form of shock which is frequently met with in injuries and surgical procedures. Recently, H. H. Janeway and E. M. Ewing from the Laboratory of Physiology and Experimental Surgery of New York University and Bellevue Medical College, have presented a series of experiments showing that shock may be produced by artificial hyper-respiration and by handling of the intestines even when provision is made for keeping the CO_2 content of the blood normal, and that shock produced by artificial hyper-respiration is due chiefly to a long-continued mechanical interference with the return of the blood to the heart. At any rate, the cardinal objective symptom of shock is a fall in blood pressure, and it appears that the fall can be due to trauma with its afferent nerve assault, acapnia, mechanical interference with the return of blood to the heart, central or peripheral vaso-motor paralyses, splanchnic dilatation, hemorrhage and the anesthetic. Therefore, if shock can be produced by one or several of the above ways, it becomes necessary to make a differential diagnosis of the cause of the shock and treat the case along right lines. Allow me to cite two cases of thyroidectomy for advanced exophthalmic goitres, both seen within the past month. In one case I gave ether. The operation lasted a little over an hour, the respirations being 70 and the pulse going from 126 to 195 and 200 per minute. The patient was in a marked acapnic state. Immediately after the operation I treated the patient for acapnia by the re-breathing method at intervals for an hour. Color became normal, respirations and pulse were slowed and convalescence was uninterrupted to her discharge.

The other case had a large exophthalmic goitre, partly cystic and angiomatous. I gave this patient nitrous-oxid-oxygen

anesthesia. The operation was extensive, and owing to the nature of the tumor, a considerable amount of blood was lost. Normal salt solution was given intravenously during the operation. The respirations were not increased by the gas-oxygen. Five hours later, owing to a rapidly failing pulse, I gave salt solution intravenously, and from that time the patient improved and fully recovered. Here were two cases of the same disease, one presenting shock from acapnia, the other presenting shock plus collapse from hemorrhage.

Diagnosis.—If we have a history of excessive hyperpnea, caused by pain, excitement, sorrow, fear, ether anesthesia, it is evident that acapnia is present in the patient, the degree depending on the duration and rapidity of the pulmonary ventilation. The more the exposure of the intestines and tissues without the protection of the skin, the more will be the reduction of the percentage of CO_2 . Suppose dynamic ether produces rapid respirations (50 or 60 per minute) and the operation lasts, say, one and a half hours, if after withdrawal of the ether the patient presents slow and shallow respirations, and a peculiar leaden color, although the pulse may be in fair condition, that patient has acapnia. The color of the veins of a patient in the acapnic state is purple. Some veins present an ashy-gray color. Acapnia may also be diagnosed by a chemical examination of the amount of CO_2 in the blood.

Treatment.—Acapnia is prevented by measures which diminish excessive pulmonary ventilation. Amongst these are analgesic drugs, perfect local anesthesia, chloroform-ether sequence, gas-ether sequence, nitrous-oxid-oxygen anesthesia, with occasional rebreathing to a moderate degree, spinal anesthesia, and by Crile's anoci-association principle in operative procedures. Chloroform does not produce

the degree of acapnia that ether does. Ether should be given by some special inhaler, so that occasional rebreathing can be practiced. Acapnia is treated by replacing the lost CO_2 in the body. This may be accomplished (a) by direct inhalation of the gas from a cylinder; (b) by having the patient rebreathe into a confined space, such as a paper or rubber bag; (c) by a saturated solution of CO_2 plus oxygen in normal salt or Ringer's solution given intravenously, the oxygen to oxidize any acidosis bodies that might be present, and the CO_2 for the acapnia, per se; (d) by allowing washed CO_2 to come into contact with the intestines and abdominal cavity. If profound acapnia should occur and Cheyne-Stokes respiration develop, direct blood transfusion is indicated. In the apnoea of acute acapnia, oxygen may be given via intratracheal method for two purposes: to prevent asphyxiation while CO_2 is being generated by the body, and to oxidize the acidosis bodies. In all operating rooms there should be a tank of oxygen combined with about 5 per cent of CO_2 for inhalation in case acapnia occurs.

To determine clinically the amount of CO_2 that should be replaced in an acapnic patient, I use the following guides: The increased amplitude and slowing of respiration, the color of the patient's veins of the flexor surface of the wrist, compared with a normal venous circulation; clinical experience.

Metropolitan Building.

ANESTHETIZATION—THE ANESTHETIZER AND THE SURGEON.*

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Since very early times man has been seeking a means of producing a surgical

anesthesia. Many anesthetic agents are now being used; new ones are being tried, but the perfection of the methods of administration of the agents now in use is the important task which confronts the anesthetizer of today. In early times sedative draughts were given; the "wine of the condemned" was employed to alleviate the suffering of criminals condemned to death. Opium, cannabis indica, carbonic dioxide and deadly nightshade were recommended in various forms. Memphis marble was used as a local anesthetic by being finely powdered, applied to the part and vinegar added, thereby giving off carbon dioxide gas and rendering the parts slightly anesthetic. Cannabis indica was burned, and the fumes inhaled. Most surgeons were content to put their patients deeply under opium. Compression of the carotids, thereby depriving the brain of blood and stupefying the patient, was a method employed to permit surgical procedures. Mesmer used hypnosis, which received the name of mesmerism. In the eighteenth century important discoveries in connection with the gases oxygen, nitrogen, nitric oxide were closely studied, and in 1772 Priestly added nitrous oxide to the list. About this time the Pneumatic Institute was formed, where it was proposed to treat phthisis and other diseases by inhalation of various gases. Its first superintendent was Humphrey Davy, who in 1799 announced that nitrous oxide appeared capable of destroying pain and might be employed in suitable cases of surgery. He experimented upon the lower animals and inhaled the gas himself, and recorded his sensations in his "Researches." The practical application of this discovery was not made for another half century.

It was not until Wells introduced nitrous oxide in 1844, Morton employed ether in 1846, and Simpson chloroform in 1847, that means of producing surgical

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anesthesia made an appreciable advance. Since that time we have been searching for the safest method of administering these agents.

The remarkable advance in surgery during the past few years has been made possible only on account of having been able to employ anesthetics to render surgical procedures painless. The rôle of the anesthetizer is far different from what it was a very few years ago. Then he was assumed as being necessary but unimportant; now it is being more generally realized that skill is needed to administer an anesthetic in such a way that the patient withstands the operative procedure and is returned to his room with a minimum amount of shock. Since a general anesthetic is not free from danger, we must employ all means within our power to assure the greatest safety to our patient. Surgical operations are undertaken with the desire to improve the patient's condition of health. Care is taken to employ a competent surgeon, but too often the anesthetizer has been given very little little if any consideration. The selection of the anesthetizer should be the duty assumed (and, fortunately, it is becoming a more general practice) by the medical attendants. The layman cannot be expected to realize the importance of a properly administered anesthetic when a large proportion of them even think that the anesthetic is given only until the patient is asleep, and then discontinued during the operation. Without an anesthetizer in whom he has confidence, the surgeon is at a disadvantage and cannot perform his work with the best results. All "special" anesthetizers are not skilled. A "special" anesthetizer is one who specializes on the administration of anesthetics. A "skilled" anesthetizer is one who administers an anesthetic with the least amount of shock and the fewest ill after effects possible under existing conditions. After having

a general knowledge of the action of the drugs, the danger signals and the methods of combatting them, the practical knowledge necessary to administer an anesthetic properly is acquired by close observation and study of the cases. There are two classes of people who are dangerous as anesthetizers—the one who is afraid and the one who is overconfident, and becomes careless. Since the anesthetic is such an important item to be considered in any operation, no matter how small, the anesthetizer should be asked to go over the patient previous to the time set for operation, and consultation between the anesthetizer and surgeon should be held to decide what anesthetic is believed to be the best in that particular case. One patient may take ether better than chloroform or vice versa. Another may be a suitable case for nitrous oxide and oxygen. We should choose the anesthetic which we conscientiously believe to be the one which the patient will endure with the least amount of danger. We should not be influenced too strongly in our choice of anesthetic by the fear which many have for any particular anesthetic or by the extraordinary faith which they may have for some other anesthetic agent. Anesthetics are only relatively safe under equal conditions. One which is considered a safe agent may be a much more dangerous one, when improperly administered, than the one considered less safe which has been skillfully administered. What has been said by Dr. Peck of New York concerning nitrous oxide in preference to ether is true to a great extent of chloroform and ether in that disparagement of chloroform in favor of ether, and then of ether in favor of nitrous oxide is based on observation of faulty methods of administration. The wide margin of safety with ether has permitted abuse and reckless administration of this drug, until many serious or fatal complications have resulted. It has given

a sense of false security. It has been decided, after careful investigation, that the best methods of using ether is by the "drop" method, which means that the ether is applied on the mask drop by drop, allowing an abundance of air. This has been shown to permit the patient to go through the operation in the best possible condition. But how often we see the ether given by the method of pouring on. All anesthetics should be started slowly, for according to the "Law of Anesthetic Accommodation," "Living units of the animal body will more readily adjust themselves to altered conditions when those conditions are applied gradually." A patient should not be allowed to become cyanotic from an excess of the anesthetic. This is usually due to the dilatation of the right heart caused by asphyxiation. There are rare cases in which the anesthetic is not at fault when the patient has an unusual amount of mucus, which affects the ventilation of the lungs, thereby causing cyanosis.

The ideal anesthetic is the one where the patient goes quietly to sleep and remains thus throughout the operation, breathes quite naturally, has only slight, if any, change in pulse rate and quality, retains a good color and regains consciousness promptly with the minimum amount of discomfort following. It is not always the patient who has the greatest relaxation of the abdominal muscles that has been given the best anesthetic, for sometimes to accomplish this we should be obliged to use such a large amount of the anesthetic that the patient would suffer severely from shock. Except in alcoholic or extremely nervous patients, it is seldom necessary or advisable to have the patient so far under the anesthetic that the pupils are widely dilated, the eyeballs congested, the eyelids partially open, a large amount of mucus present, jerky chin breathing, patient of an ashy or cyanotic hue. The

cases mentioned above are the kind which relax very slowly, even when a large amount of anesthetic is being given, and it is impossible to markedly hasten the relaxation if previous medication has not been employed. Work about the diaphragm in gall-bladder operations and about the rectal area causes the patient to perhaps moan, and this is often mistaken for a light anesthesia, while such is not the case. Ether should be given evenly and continuously, so that it will not be in too concentrated a form. It is the concentration of the drug which damages the organs, and not the length of the anesthesia. If ether is properly given it is safer than chloroform, but if it is not well given, chloroform carefully given is the safer. Ether is now often used when contra-indicated because of the fear of chloroform. Statistics are quoted to show that ether is many times safer than chloroform, but statistics concerning anesthetics are practically worthless. These statistics can easily appear to prove either side of an argument in favor of the use of ether or of chloroform. The published death rate from ether varies widely. One set gives the rate as 1 in 481 administrations, and others give various numbers, ranging down to 1 in 23,204 administrations, which is a difference of about fifty times. The chloroform rates as published vary from 1 death in 1,186 administrations to 1 death in 11,448, which is a difference of ten times. In the records of post-operative deaths in a city of 200,000 inhabitants over a period of ten years, a record showed ether as the cause of death in ten cases and chloroform in four. Knowing that deaths occasionally occur from an anesthetic, even when properly administered, we must realize our responsibility in perfecting our administrations so that if a serious accident or post-operative complication does occur, we will feel that they are not due to our faulty admin-

istration. The greatest safety to our patient lies in the careful administration of the smallest possible quantity of the anesthetic. The co-operation of the surgeon with the anesthetizer will accomplish this result.

In conclusion—

(1) A "skilled" anesthetizer should be employed for surgical operations.

(2) No rigid rule as to what anesthetic agent should be used in all cases should be made, but each case should be decided after due consideration.

(3) Continuous, equal distribution of the anesthetic is essential to a safe anesthesia.

(4) If a serious accident occurs to our patient a considerable time after an operation and is the result of an over-dose of the anesthetic, we are as much responsible as if a serious accident had occurred at the time of the operation.

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DISCUSSION.

O. M. Shere, Denver: Dr. Charles asked me to open the discussion of his paper, and I shall limit my remarks to that part of the subject which deals with the intimate relationship between the surgeon and the anesthetist.

It might be supposed, and it certainly was so in the past, that the role of the anesthetist during an operation was one of minor importance, but this idea, I am happy to state, is gradually disappearing and will soon be entirely abolished. We are beginning to realize that the doctor who is to administer the anesthetic for the surgeon is in a great many cases as important a factor towards the successful recovery of the patient as the surgeon himself. Many of us are able and perfectly equipped to do certain surgical operations, but how many, on the other hand, are there so equipped to give a safe and careful anesthetic.

The relationship grows still more important when we consider how much reliance the surgeon must place upon the anesthetist. To illustrate this phase I wish to cite two cases which have occurred in my practice during the past month. The first was a patient upon whom a great deal of work had to be done in the upper abdominal cavity. The patient was anesthetized by an interne whose experience along this line of work was indeed very limited. I could see that he was fearful of his task, and his repeated remarks that the patient was pulseless and that his breathing

had stopped was certainly very annoying, to say the least. After hurried work the operation was completed. Upon examination of the patient the pulse as well as respiration were found to be satisfactory and he proceeded to a rapid recovery. In the other case where the anesthetic was given by Dr. Charles to an emaciated patient afflicted with a large liver abscess the method used was that of intra-tracheal insufflation, a method somewhat new and could certainly not be handled by one inexperienced. I felt at perfect ease during all the stages of the operation because of the certainty that the anesthetist knew what he was doing.

Another point I wish to make is one relative to the invasion of new fields of surgery because of the perfected newer methods of anesthesia. I refer here to lung surgery, which has been greatly improved and certain operations made possible by the insufflation method as devised by Meltzer and Elsberg and lately so well perfected by Connel of the Roosevelt Hospital. This method, which affords an even administration of well-diluted ether vapor, relieves the respiratory apparatus and central nervous system of much strain, and above all over-etherization by such method is impossible. In operations about the mouth it prevents the inhalation of blood and vomitus, thus obviating post-operative pneumonia or bronchitis. The work upon the head and neck is made much easier, as the anesthetist is out of the way and hence the field easily kept sterile.

The point made by Dr. Parsons about post-anesthetic treatment receives my hearty commendation and approval. If such observation and treatment were carried out in every case the greatest safety to the patient would then be accorded.

We are all impressed with the fact that at the present time there is no intrinsically safe general anesthetic; let us at least try to employ an intrinsically safe anesthetist and in order to bring about this happy result the co-operation of the surgeon with the anesthetist is most essential.

Thomas A. McIntyre, Cripple Creek: I enjoyed very much listening to the paper of Dr. Charles. One point that I think we do not emphasize as much as we should and that is the consultation between the anesthetist and the surgeon before the anesthetic is given. I believe in a great number of cases if that were done there would be less trouble from the anesthetic. Another point I wish to mention is the choice of the anesthetic, more especially with us in Cripple Creek. I believe the anesthetic of choice in high altitudes to be chloroform, more particularly for the following reasons: On account of the rarefied atmosphere, and the lessening of the atmospheric pressure, you do not get the vaporization from the ether that you should; the ether is crystallized on the mask and no vapor is given off. Ether is given saturated—that is, the inspired air is saturated with the ether vapor, which has been estimated as being in the neighborhood of seventy per cent. A given volume of vapor in Cripple Creek contains fewer molecules, there-

fore less ether than a similar volume of ether vapor at a lower altitude. Therein, to my mind, lies the danger from the greater saturation of the patient. Chloroform in the inspired air is in the neighborhood of two and a half to three per cent.

In a number of cases I have found it almost impossible to give ether, especially by the drop method, using four or five ounces of ether in the course of thirty minutes and during that time the patient was able to talk and at the end of that time to get off the table. With the lower percentage of chloroform I believe it makes the safer of the two anesthetics at high altitudes.

W. W. Grant, Denver: This subject is too important not to be fairly considered by this society.

Anesthetics, their administration and effect, are keeping pace with the progress that is being made in the technique in reference to nearly every known surgical operation.

I am surprised at the statement of the last speaker about the greater safety of chloroform (in high altitudes), especially in view of the fact so well emphasized today that anesthetists should be skilled men, well prepared for their work. It would be surprising to find that Cripple Creek had a man competent to give chloroform, as has been stated by the last speaker, with greater safety than ether can be given. I am also surprised that he should state—I am not disputing the statement, but I am surprised at it—that it would require so much ether by the drop method, and failure to anesthetize the patient.

I feel distinctly that the anesthetist should understand perfectly, from the surgeon, what the operation is, and ordinarily today the anesthetist, who knows his business, asks what character of operation is to be performed, that he may himself be prepared and be on his guard as to what is to be done and how long it will probably take. These matters are not understood by many of the ordinary hospital internes. They are not understood by the physician who sometimes, if forced to give an anesthetic under emergency, or under conditions where the skilled man cannot be had. This is a matter which we have considered in our hospital work, but we have not yet been able to secure what manifestly we should have, and that is a well-paid professional anesthetist to give the ether in all cases, whether rich or poor.

Many patients are so poor that they cannot afford the extra expense, and, therefore, they are compelled to use only an ordinary anesthetist to do this work.

I have gone through the same experience as Dr. Shere, in which I have been embarrassed throughout the operation by the manifest bad behavior of the patient due to faulty anesthetization. There is nothing more embarrassing to the surgeon. It hurries him in his work when he does not want to be hurried, and it often interferes with the attainment of the most skillful surgical work.

With our improved methods we ought to be able to overcome all these difficulties. In New

York last November at the Surgical Congress I saw long operations done under intra-tracheal insufflation, which has been used more by Robinson of Boston, who is now, in New York, Clifton Springs, and of whose work I have read and witnessed. I have also seen patients under the influence of intra-tracheal anesthesia given by the machine perfected by Elsberg, and I have never seen any more thoroughly peaceful and natural sleep under trying abdominal operations than by that method.

Of course it requires an expert to manage it, and yet the machine acts almost automatically, the anesthetist watching the valves and gases, and patient's color and pulsation to determine his condition. I have, in talking with Denver anesthetists, urged them to perfect themselves in this method, because it is so often needed. In two recent cases of my own it could not be given because of an abscess having broken through the bronchial tubes made it dangerous to give any anesthetic under such conditions until the abscess was first aspirated.

This subject is very important, and it is so well understood that of all of these agents chloroform is the most dangerous and the one that can be least entrusted to the ordinary anesthetist I cannot feel that it is right to let the statement of the essayist go out with the sanction of this society, because the drop method of ether, nitrous oxide and oxygen are all safer and much superior in every way.

C. E. Tennant: I want to endorse from personal observation what Dr. Grant has stated. I also regret very much not having heard the papers. I must say that it is generally conceded that chloroform is unsatisfactory to use. The sudden deaths which occur, and we have all seen them on the operating table, have been almost invariably with the use of chloroform, the patient just starting under the anesthetic, perhaps five minutes on the table, heart paralysis, the patient is gone; a sudden death and a tragedy to the hospital, not so much to the surgeon, perhaps, because he has not commenced with his work, but usually censure for the hospital and the one who is administering the anesthetic.

It is interesting to note the differences today in the handling of our patients on the table and later the convalescing period as compared with the same conditions ten or fifteen or twenty years ago.

At that time we had embarrassments on the table, the internes were not the trained type of individual, and the operations were hurried through, and as has been suggested sometimes unsatisfactorily done; the patient hurriedly returned to the room and then the surgeon's responsibility commenced and that of the anesthetist cease. The moment the patient was delivered to the room and the patient apparently recovered, the anesthetist was gone, and the trials and tribulations for the surgeon during the next twenty-four or forty-eight hours were great while watching the patient through the danger period following the anesthetic.

The same thing holds true today, when the

untrained individual handles the patient, for invariably at the operating table, and for several days following, although the anesthetist may be watching the patient carefully, we are having complications to meet such as do not occur with the well arranged and executed anesthesia.

The question of using drugs with an anesthetic is rather important. I do not know that it has been touched upon in the papers. I believe that we all feel that the less drugging used at the time of anesthesia the better, and yet there are some certain instances where some preparations of morphine may make it more comfortable for the patient and permit the use of less anesthetic, especially when work is being done about the diaphragm.

The expert anesthetist does not pay any attention to the quantity of the anesthetic he uses. He is watching for certain results and those only. When the end of the story has been told we will find that he has been very successful in accomplishing perfect anesthesia for a long period of time with a trifling amount of anesthesia compared with the amount used when it is given irregularly by the untrained.

I want to endorse the position taken by others that we must have more of the trained anesthetists and none if possible of the inexperienced individuals administering anesthetics, and when we have that then ether is satisfactory at any elevation.

With reference to elevations, ether may volatilize more rapidly at higher elevation, and yet at the same time the expert anesthetist administering it, often as he does, keeps the patient well under, with not much more use of the anesthetic than he would at a lower elevation.

I have had some experience with the use of carbon dioxide in the anesthetization of animals, of which I should like to speak. Before I get to that, however, I want to speak of one important fact; there is a period during the time one is going under an anesthetic in which with an increased quantity or accumulation of the dose, there is a sudden spasmodic contraction of the epiglottis with absolute inability to take in either air or the anesthetic vapor. The patient will struggle at this stage, and these may be the patients that we speak of as being in the period of excitation. They struggle violently and I believe they are obliged to do it, for air. The sensation to one at this time is just like tying a rope around the neck and cutting off the air. The expert anesthetist understands this and simply raises the mask and gives a little air, and the spasmodic contraction of the epiglottis ceases and the patient lapses gently and gradually, and will go under without excitation or violence. I think that is really an important fact to know.

With relation to carbon dioxide, in the administration of the anesthetic; with animals I find one can use very little of any form of anesthesia if an open boot or some close-fitting, impervious-to-air mask is used and the animal's head placed well in the inclosed space

and there inspire the air; unconsciousness then occurs with but little of the anesthesia.

George W. Miel, Denver: This is a matter of very great practical importance to us all, and those who have any use for anesthetics will be glad, I think, to hear the expressions of those who feel they have something to say on this topic.

The papers read this afternoon I am sure were gladly listened to, and offered practical points. It is advisable to have the best service possible in the administration of an anesthetic. In some instances of operation I am satisfied the anesthetist has place of first importance, though much more often his place is second, which is in no way belittling; we could not get along without him.

The matter of establishing a professional anesthetist is a problem. You all realize that you may be called on at any time to give an anesthetic and if you have had no actual experience how are you to have any confidence in administering it? Of course it is desirable that these important cases shall be handled in the hospital; but, as a matter of fact, a great many important cases are and must be handled outside hospitals. There must be some provision for the man who is on the outside to become accomplished in administering anesthetics.

Next, and last, a few words upon avoidable complications, sometimes fatal, in connection with the administration of an anesthetic: How often have you noted, in minor operations without the hospital, that little or no provision has been made to meet the complications which may arise during administration; comment receiving the questionable assurance that difficulties were not apt to arise; that no emergency is anticipated.

Charles D. Spivak, Denver: I am not a surgeon nor an anesthetist, but I will be pardoned for saying a few words, as it is only recently that I have entrusted my life to the surgeon and the anesthetist. They have done their work very well, as you can see: the operation was a success and the patient is alive. I do not know whether my surgeon used morphine on me before the operation, nor do I remember what happened to me after the anesthetic was administered, but it seems that things went on smoothly. What I want to say, however, is that, while listening to the discussion—I am sorry I did not hear the papers—it occurred to me that I had read somewhere, I think in the *Journal of the A. M. A.*, that Crile said it was necessary to use morphine to prevent shock; and to administer anesthetic to the site of the incision. For the latter he uses quinine urea hydrochloride.

I should like to feel that future patients need not suffer as I did from the incision if we can help it. It seems to me it would be a very good thing to discuss this matter, whether the surgeons of the present day have taken up the suggestion of Crile of administering some anesthetic to the wound itself.

James J. Pattee, Pueblo: It seems to me that if we are going to increase the scope of the local anesthesia, that the same should be

included in the realm of the special anesthetist. Local anesthesia is certainly not without danger and, for my part, the fear has been just as great with its use as that of general anesthesia. I should like to ask the essayist if, in his opinion, the administration of local anesthetics should also be delegated to one who makes a specialty of the administration of anesthetics, or whether the operating surgeon should look after his own anesthetic. Certainly, I can see how the surgeon would frequently experience considerable annoyance, of which he might be relieved if the anesthetist took charge of that part of the work.

F. N. Cochems, Salida: This subject is very interesting, and there seems to be a great difference of opinion—which is what makes prize-fighting good. It is evident that no anesthetic is perfect. This is evident, for otherwise we would not be casting about for a better and a safer anesthetic. Twenty years ago in the County Hospital in Chicago the number of deaths were as high as one in two hundred and fifty, with chloroform anesthesia. And, before I forget it, I should like to ask the essayists to tell us by what method they make chloroform anesthesia safe?

I believe it is recognized that the ordinary anesthetist had better give ether than chloroform. I saw so many dangers and so many bad results from chloroform at that time, in my service, that I never in my life have asked an anesthetist or allowed an anesthetist to give chloroform, never once. I may be wrong; I may have sacrificed some lives; I hope not. The only time that chloroform was ever given when I operated, was in one case where I ordered ether and the case did not do very well, and the anesthetist used chloroform, and the patient—according to his own story—died. This patient was evidently dead for several minutes. The anesthetist frankly said: "There is no use working on this case any more, doctor, she is dead." She relaxed, and several minutes after ceased breathing. Fortunately she came out O. K. I asked why chloroform had been used, and the answer was, simply, that ether did not do well.

I have never allowed chloroform to be given at any time in my life, and I believe that the ordinary anesthetist had certainly better give ether. Of course we have skilled men and I am willing to be convinced, but I should like to have the essayist convince me that chloroform is anywhere near safe.

The same statement that Dr. McIntyre made regarding high altitudes, was made a number of years ago by some of the men who lived in the high altitudes of mining camps, in the City of Denver, where I read a paper, and stood for the same proposition, that up to that time we had nothing as safe as ether. These men, some from Cripple Creek and one from Leadville, claimed that they could not give ether as successfully as they could chloroform in the high altitude, for the same reasons assigned by Dr. McIntyre.

However, I have operated in these different camps and I have never really had any trouble with the ether proposition, and believe it

safer. They seem to give the same reason for giving the chloroform at high altitudes as people in the south, in the hot climates, gave many years ago, regarding the evaporation. The Hyderabad Commission, the English commission that was sent out along in the early nineties, studying the effect upon dogs of chloroform, and they made extensive experiments, and that was the first time that anyone ever did say, so far as I know, that chloroform did not kill by paralyzing the heart, but did kill by paralyzing the respiratory centers.

The question of special anesthesia is also interesting. Dr. Hugh Cabot in the Massachusetts General Hospital, in the clinic last winter in Boston, was very positive regarding the matter of anesthesia, and claimed that by a spinal anesthesia, that he was giving in the prostate cases, he was cutting the mortality absolutely in two; not one-quarter, but cut it in two, which is a very strong statement. I do not know whether that is true or not; I have not tried it sufficiently, though I have tried it to some extent.

The method of intra-tracheal anesthesia is of course one given up to the specialist. I had an opportunity of seeing a few cases anesthetized by Dr. Carl Connell of the Roosevelt Hospital in New York, and it was very smooth, but I really did not see the necessity for it at that time, because the cases were not chest cases.

I have done some operating, and I want to put myself in a class with those who say that ether today is the safer for the man who operates. We cannot all operate with skilled men as anesthetists, though we should like to do so, but there is more operating going on today where men cannot have a skilled anesthetist than where they can have that advantage, all over this country, and, therefore, I believe that the anesthetic of choice today is ether, as Dr. Grant has tried to show; and I believe that that is a highly important thing. I think chloroform is a poison and should never be used.

F. E. Wallace, Pueblo: Some years ago while having extensive interne service giving anesthetics my attention was attracted to an apparatus for the purpose of giving ether or chloroform, called the Cunningham apparatus. I gave anesthetics with the apparatus and I never had so much pleasure or such good success with any other method as with this. The patient went under so smoothly and so easily, and came out so nicely, without the vomiting, that I want to mention the apparatus here. This device consists of a container with two compartments, one containing hot water and the other ether. There is an inlet and an outlet valve. A tube leads from the outlet valve to a mask over the face. The air goes in over the ether and then over the hot water. Other valves are capable of being regulated to an exact amount of air and an exact amount of ether vapor, so that it can be controlled to a nicety. On the sides of the apparatus there are tanks of oxygen and of nitrous oxide, which can instantly be turned into the mask providing you want it. To the man who is giving anesthetics, I feel it is a means of safety and an easier method of administering it, and the pa-

tient getting not more than the amount desired, but simply the quantity of anesthesia that is actually needed. The amount of the ether is at all times perfectly under control.

Wm. M. Spitzer, Denver: I am glad Dr. Cochems has mentioned spinal anesthesia. Perhaps I have had as much experience with spinal anesthesia as anybody here. The reason for this has been the necessity in my field for an anesthetic that was safer than any general anesthetic, particularly in my operative prostatic cases. These cases come to you, especially in the charity hospitals, with a dry tongue, high blood pressure, a breath that smells of urine, eyes that are almost closed, and, to be brief, in a dying condition. If you do not operate, according to my experience, you will lose practically one hundred per cent of these cases; whereas if you do, you will lose a large percentage, possibly fifty. These are not the cases that can be bettered to any great extent by permanent catheter drainage, although I almost invariably attempt this.

We must therefore operate on these people, no matter what our mortality may be; and I agree absolutely with Cabot, whose mortality was fifty per cent with a general anesthetic and is now twenty-five per cent with spinal anesthesia, in suprapubic prostatectomy, that the spinal is the ideal anesthetic for these cases. I have used spinal anesthesia for this work before Cabot did.

Another class of cases in which this anesthesia is indicated are the urethral stricture cases that come to us at the age of fifty, who have been alcoholics for years, have no vitality, and when stripped do not even look like the men they appear to be when dressed. These cases I have seen die from general anesthesia of no matter what type, and so has everyone else here who has had very much experience with them. The manner in which they die, and the time of death after operation make it clear that they succumbed to the anesthetic.

Still another class of cases in which the spinal anesthesia is desirable, indeed, I do not know how anything else could be used with such safety, is that class in which operative work is to be performed on people suffering from pulmonary tuberculosis. It may be that these cases are going to live for years and years, or even improve sufficiently to be more or less useful citizens. A general anesthetic for a patient of this sort for an epididymectomy seems to me contra-indicated, whereas these patients do very well under spinal anesthesia. To be sure, it carries its moiety of danger, but the amount of danger depends upon how it is used. If one uses an anesthetic which is lighter than the cerebro-spinal fluid and promptly after its administration puts his patient in a reclining position with the head lower than the buttocks, or in the event that a heavier than cerebro-spinal fluid anesthetic is used, follows a reverse procedure, i. e., keeps the patient's head always above the level of the buttocks, and avoids Trendelenburging the patient, there is practically no danger. In perhaps half the cases where a spinal anesthetic

is administered one will meet collapse. The vast majority of these collapses are of no importance, and one need not bother about his patient to any greater extent than giving him a drink of whiskey or a little ether to inhale (ether inhalations being an antidote to collapse). The collapses which are met with after fifteen minutes from the time of administration have elapsed are the unimportant ones, whereas those that occur within five or six minutes after its administration are the ones one should fear. After putting the patient to bed, to be sure there sometimes appear a few little troubles which last for a while, such as headache, or perhaps bladder paralysis, or perhaps paralysis of the legs, but these clear up by themselves invariably. To balance these, the usual sickness met with after general anesthesia is absent, and the danger of lung complications and many other dangers of a general anesthetic are avoided.

Lastly, shock is not present until the spinal anesthesia begins to wear off, and then one has a chance to combat the shock before it appears.

Spinal anesthesia is really not spinal anesthesia, but a nerve anesthesia. The fluid injected into the vertebral canal below the level of the spinal cord does not anesthetize the body because of its action on the spinal cord, but, as Dr. Parsons says, it bathes the posterior nerve roots and thus produces a true local anesthesia.

These are all included in the statistics given on death rate, indicating it to be so high from chloroform and so low from ether. These points are just mentioned to show that you have to be pretty careful, when you are looking at the statistics, because there are so many factors to be taken into consideration.

In favor of chloroform we have Dr. Turpin of Corpus Christi, Texas, who objects very strongly to the advice given as to the entire exclusion of chloroform. He says that chloroform is used ten times as often in Texas as ether is, and he likes it very much; never had any trouble with it, and thinks there are a hundred surgeons in the state of Texas who bear him out and say the same thing; so everyone does not favor ether. And if we do favor ether we must remember that we have not an entirely safe anesthetic which can be just thrown on and which anybody can give and not mind about the possibility of the after effects developing in a few hours or a few days, if not at the time.

I will not say anything more about the spinal anesthesia, because I did not intend to take that up, except to mention that by no means is the spinal anesthetic a perfectly safe one or one devoid of after effect. In 1,146 cases of spinal anesthesia reported in one series there were 346 of those patients who went from their surgeons who did the operations, to consult their family physicians afterwards for such things as extremely severe headaches, neuralgias or even paralyses and other things of that sort. So that makes a very large proportion of patients who had to consult their physicians afterwards, and a great many more

probably suffered less severely without consulting physicians.

Therefore, make no unchangeable rule concerning the anesthetic agent which you will use, but realize that each has its particular field and that the proper administration is of greater importance than any mere decision as to which anesthetic agent is to be used.

Carl G. Parsons, Denver: I want to thank Dr. Charles for giving us such an excellent paper upon the important subject of anesthesia. He dwells particularly upon the selection of an anesthetic, a consideration which is of great importance.

I have always advocated that all anesthetics, whether local, spinal, or general, are good in their place, and that the anesthetic should be fitted to the patient and not the patient to the anesthetic. Happily, we are able to use ether in about eighty per cent of all operative cases. A few years ago, in an editorial, I gave ether about eighty per cent the preference over all other anesthetic agents, and I have not yet seen fit to change my opinion in that regard. It is said by statisticians that ether is five times safer than chloroform, but these statistics refer to the deaths occurring on the operating table. Post-operative deaths due directly to ether are numerous, not so much from pulmonary complications, but from ether nephritis, lowered opsonic index and cardiac asthenia. It is a question whether the late pathological effects of chloroform are more numerous than those of ether. Since anesthetics are now greatly administered by expert anesthetists, the dangers of immediate and post-operative deaths due directly to the anesthetic are very much lessened.

In regard to spinal anesthesia or analgesia, I wish to state that I have had quite an extensive experience with the method, and while it is true in a very small percentage of the cases, we have temporary headache, neuralgias, and perhaps other unsatisfactory conditions, yet on the whole, this method of anesthesia is exceedingly satisfactory in the few cases where it is indicated. I suppose occasionally these post-operative cases do go to their family physician for various troubles, but had they been operated under other anesthetics, a great many would speedily find their way to the undertaker. You must remember that operative cases who receive a spinal anesthetic are bad risks, and are usually operated by this method when other anesthetics are contra-indicated.

Gas-oxygen anesthesia is an excellent anesthetic in cases where it is indicated.

The only reply an expert anesthetist can give to the question, "Which is the best anesthetic?" is that they are all good, where indicated. Of course, we know that ether is the great general anesthetic and should be used in the majority of cases, but there are a certain percentage of cases where other agents should most certainly be used, and for these minority cases, discrimination in the selection of the anesthetic should be carefully made by the surgeon and expert anesthetist in consultation.

Acapnia is a new subject and is of great im-

portance, both to surgery and anesthesia. I can recall a number of post-operative deaths due primarily to acapnia. I hope surgeons and anesthetists will look into this subject so that we may get at its real worth.

I want to say a few words in regard to acidosis sometimes seen following anesthesia. The subject of late chloroform intoxication, which occurs occasionally, has been worked out and put upon a fairly firm basis. Nitrous-oxid-oxygen, or ether if given improperly for a length of time, will cause an acidosis to develop, in much the same way as acidosis from acapnia. The condition is brought about by tissue sub-oxidation, and should rarely occur if the anesthetic is conducted properly.

Robert L. Charles, Denver: I was not attempting to say just which anesthetic should be used to the exclusion of the others, but I intended to convey to you that there is a place for each of the anesthetic agents which we now have, for the ether, for the chloroform, for the nitrous oxide and for the spinal anesthesia, and that none of them are absolutely safe. There is a danger with each of them, and in order to choose the proper anesthetic and then to see that it is given properly is the duty which lies before us.

Of course in many places chloroform has been much talked against, and what I said was that ether properly given is a much safer anesthetic than chloroform properly given, but many feel that we are perfectly safe when we get hold of ether, as a rule, and for that reason a great many have given ether in a careless way and the patient has suffered and had complications of the lungs and the kidneys in a few hours or a few days after the anesthetic and the results have been very disastrous sometimes. When ether is given in such a way as to cause those complications, the chloroform properly given would be the safer. But I am not advocating the use of chloroform instead of ether. I said that as a rule ether is the most safe. I believe this anesthetic is well indicated in certain cases, but where it is improperly given the patient is simply drowned with the anesthetic, a proper chloroform anesthesia in that particular case would be much safer for the patient. Dependence cannot be placed upon the statistics, because there is such a variation, the literature giving deaths from ether as all the way from one in 481 administrations down to one in 23,000, fifty times in the one instance over what it is in the other, and in chloroform it is given as one in 1,148 down to one death in eleven thousand and something, which makes a difference of ten times. So if anything could be proven by those statistics, everything could be proven by them.

Dr. Stiles of Edinburgh, Scotland, was in Denver at the National Surgical Convention, and he said that over in Scotland, as well as in England and most of the other European countries, they use chloroform a great deal more than they do ether, and, as Dr. Stiles said, anyone in this country who suggests the use of chloroform seems to be looked upon with suspicion. He said one reason why chloroform

has such a number of opponents in this country is from the fact that the surgeons are afraid of it, and anyone who is afraid of an anesthetic agent, whether chloroform, nitrous oxide or ether, should not use that particular anesthetic agent.

Some will argue that ether is stimulating and not depressing. Ether in small amounts is stimulating; so is morphine and so is alcohol, but if you give an overdose of either of them you have a depressing effect. In cases where ether is given properly of course you do not get the depressing effect as where the patient is overdosed, but that is one of the things that we are trying to correct, the improper administration of the anesthetic.

Ether has been considered safe, and still Drs. Gatch, Gann and Mann of Indianapolis, just made extensive experiments upon dogs to show the ill effect of ether when the patient is in the Trendelenburg position. In experiments with ether they had sixteen different dogs and the respiration was stopped thirty different times on these sixteen dogs, by pouring on a large amount of ether. The dog would usually recover when they were in the horizontal position, but when the patient was in the Trendelenburg position they would not recover except through artificial respiration. There was just one dog out of thirty which recovered spontaneously, and they thought at first it was due just simply to the tiring out of the muscles of the diaphragm from raising the abdominal contents at each inspiration, so that it was believed that was the cause of the respiration ceasing so quickly after they were put in the Trendelenburg position. But that was found not to be the case, later, because under morphine the dogs would not stop in that way, but would keep on breathing for hours, where in the ether anesthesia the dogs would stop at an average of twenty minutes; one of them stopped in three minutes, another one in five, but the average of the whole series of thirty was twenty minutes. So we must remember these possibilities in the use of ether or we are not safe.

The mortality with ether as well as with

chloroform is very high. Almost all of the statistics given in this country and in Europe, the deaths which occur a few days or a week or ten days after the operation are not recorded as a death from ether as a rule. It is put down as due to pneumonia, or nephritis or some other complication, but it is due to ether, and where you have a death from chloroform, except in a very few cases where you have a liver complication, your death is right on the table, and that is recorded as such. Dr. Gwathmey of New York has the best lot of statistics which anybody in this country has, I believe.

Out of fourteen hundred hospitals, with more than ten beds, in this country and Cuba and Panama, to which he sent inquiries about their death rate from anesthetics, only 201 answered at all, and 102 of them said they had no records and only 99 gave the records out of the 1,400. In these hospitals 157,000 ether anesthetics were given, and altogether there were 279,000 anesthetics of all the agents, and in that number the death rate from chloroform was one in about 2,300 administrations, and from ether about one in 5,236. That made only a little over twice as many deaths from chloroform as ether, but that includes the anesthetics given by inexperienced men as well as experienced men, and it did not include any deaths that occurred except right at the time, which was due to the anesthetic at the time. It does not include the post-operative complications which are so common especially with the ether.

Mention has just been made where patients are operated and you are away from the hospital, perhaps in a place where you cannot get all the facilities, and chloroform is usually given, for that is the anesthetic on hand more often than the ether, and in such a case you may get a man or woman to give the anesthetic who has little or no experience but the emergency must be met. And those deaths are also counted against chloroform. The same is true in dentistry. Dentists employ chloroform for the extraction of teeth, and the mortality there is very high.

EXCERPTS FROM RECENT LITERATURE

The Influence of Splenectomy in Pernicious Anemia.—The remarkable cures achieved by splenectomy in hemolytic diseases have been productive of the thought that the spleen must play an important rôle, if not the chief one, in these pathological processes. The analogy has been made to hyperthyroidism, in which condition the symptoms disappear after the removal of the gland. The same is true in

many cases of hypersplenitis, such as splenomegaly and allied conditions where in a cure was brought about by the removal of the spleen.

Experimentally it was proven that the hemolytic properties of the spleen are enormously great; it was also established that the best index to the destruction of red blood corpuscles is the urobilin content of the stools. These two factors were

confirmed clinically in cases of valvular disease and cardiac insufficiency as well as in cirrhosis of the liver, where the clinical picture is distinctly due to the destruction of red blood corpuscles. Congestion and stasis of the blood favor destruction of red blood corpuscles, and this is particularly evident in cases of cirrhosis of the liver.

The fact that enlargement of the spleen is almost uniformly found in the diseases above named is sufficient to at least suspect the spleen as the organ mainly responsible for the hemolytic process—and the improvement in a series of clinical cases of this character after splenectomy confirms this suspicion. Eppinger's conclusions, based upon eighteen operative cases, are thus expressed by him: 'Splenectomy possesses a curative action whenever there is destruction of the blood from any cause.'

That this operation was successfully carried out in cases of hemolytic jaundice is not entirely new—it has been performed numerous times previous to Eppinger's communication. Its application, however, to cases of pernicious anemia is entirely new, and credit should be given to Eppinger for it. He operated two cases of the latter disease with wonderful results. In one case the disease existed for one year previous to coming under his observation. The blood count showed only 1,480,000 erythrocytes per cbmm., with numerous nucleated reds and extensive poikilocytosis. On operation the spleen was not markedly enlarged. After splenectomy, without the aid of any drugs, the patient showed remarkable improvement. His weight increased by twenty-two pounds in five months and the erythrocytes at this time numbered 4,300,000 per cmm.

In the second case the success was still greater. The erythrocytes increased from 1,600,000 to 4,900,000 in six weeks following the operation, and in five months the

patient gained thirty-five pounds in weight, while his general physical condition was that of a normal individual.

Huber reports another interesting case, that of a woman of 34, whose blood count at the first examination was 1,000,000 reds, hemoglobin 20 per cent, and in other ways the blood picture was typical of pernicious anemia. After several injections of defibrinated blood the patient's condition improved but slightly, and this improvement was only temporary. Splenectomy was then performed, the entire operation consuming but twenty minutes. The patient's recovery after operation was phenomenal. After five weeks the hemoglobin was 50 per cent and the red count 2,500,000 per cmm. Extensive edema which existed before the operation completely disappeared and the high temperature vanished. The weight, in spite of the disappearance of the edema increased over five pounds. Although the condition became somewhat worse after ten days, it was at this time greatly benefited by injections of defibrinated blood, which were unsuccessful prior to the operation.

Granting that the result in the foregoing case is not as good as that obtained by Eppinger we must, nevertheless, admit that the operation saved the patient's life, and that the future outlook of the case is encouraging, to say the least.

Klemperer and Hirschfield report two cases of pernicious anemia in which splenectomy was followed by marked improvement. This brings to five the total number of cases on record in which the removal of the spleen has been performed in the treatment of pernicious anemia.

From the above reports we may summarize the following:

1. That the spleen plays an integral part in all hemolytic diseases.
2. That the blood picture changes almost immediately after splenectomy in pernicious anemia, showing an essential

influence on the regeneration of bone marrow.

3. No such powerful reaction on the part of the bone marrow has ever been obtained by any other measure.

4. That splenectomy stimulates the new production of red blood corpuscles is established beyond any doubt experimentally as well as clinically.

5. As to the permanency of the benefit attained by the operation, time alone will show.

6. That in cases of pernicious anemia, where other treatment has failed to benefit the patient, splenectomy should be highly recommended and urged.

O. M. S.

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The Hypophysis Cerebri.—This gland is formed by a hollow downgrowth from the fore brain in the floor of the third ventricle. In man and monkeys the lumen closes by approximation of the walls and a solid stalk produced. The terminal portion develops a bulbous swelling, and it is embraced by the true pituitary. The hypophysis proper is made up of neuroglia cells and fibers, and is invaded by epithelial cells from the pars intermedia, colloid matter being found in it. The hypophysis is not essential to life. The active principle has not been isolated, but extracts of the gland show that it does not give the chemical reactions of adrenalin, and in certain respects its physiological action is different. It is dialysable, is not destroyed by heating or reducing agents and is insoluble in alcohol and ether. It may be called hypophysin and is not pituitrin. Extracts of the hypophysis cause a constriction of the arterioles in mammals, but in birds it causes a dilatation. This argues for two substances present in the extract, a vaso-constrictor and vaso-dila-

tor, the latter alone acting on the arterioles of birds.

In mammals hypophysin has a dilator action on the renal artery and acts as a constrictor of the coronary arteries, thus differing from adrenalin. Adrenalin acts more centrally, hypophysin peripherally. It increases the force of the heart's contraction, whether the vagus is intact or cut.

It is a powerful excitant to contractions of the uterus.

It has a marked diuretic action, and increases the flow of milk, but not the excretion. Protein catabolism is increased by the administration of hypophysin, and injections may cause hyper-glycaemia and glycosuria, much the same as adrenalin. Stimulation of the hypophysis in operations is apt to be followed by glycosuria and by a decreased assimilation of sugar. Removal leads to increased assimilation of sugar and a tendency to put on fat.

Evidence seems to be that the hypophysis either elaborates within itself or takes from the pars intermedia of the pituitary certain products which act upon the tissues of the body much in the same way as adrenalin, but at a point peripheral to that acted upon by adrenalin.—*Regulators of Metabolism*, Paton.

The Essential Features of Acidosis.—

Andrew W. Sellards (*Johns Hopkins Hospital Bulletin*, May, 1914), in an extensive review and investigation of acidosis, offers the following conclusions in regard to the essential features of the condition:

1. Acidosis consists in a general impoverishment of the body in bases or in substances which readily give rise to bases, e. g., sodium carbonate. The impoverishment in bases may be brought about by the loss of bases as such, as in the so-called relative acidosis, or by the neutralization by acids, as in the so-called

absolute acidosis. In either case the end result is the same.

2. The fundamental features of every acidosis which have been established thus far are:

An increase in the tolerance of the body to fixed bases;

A diminution in the titratable alkalinity of the blood serum;

A diminution in the CO_2 of the blood.

3. The excretion of ammonia either in its relative or absolute amounts does not afford a definite basis for the detection of acidosis, since ammonia excretion may be increased 2 grams per day with an ammonia coefficient of 40 per cent in conditions in which there is no acidosis.

4. Acidosis reaches its maximum in the uraemia of acute and chronic diffuse nephropathy. It is not a terminal event and may be present many months before the development of uraemia. It is an effect rather than a cause of the renal lesion.

5. The changes in the titratable alkalinity of the blood which can be detected by the use of phenolphthalein afford a ready means for the prompt diagnosis of acidosis and furnishes a definite indication of the amount of bicarbonate that will be required for the relief of the acidosis.

6. Some of the toxic symptoms of uraemia are due, not to the presence of a toxin, but to the absence of a normal constituent of the blood, namely, the carbonates. Therefore bleeding in a case of uraemia removes a substance in which the blood is already depleted, and bicarbonate should be injected at the time of bleeding to make up this deficiency.

7. Acidosis is perhaps the result of defective function of the kidney in the normal separation and excretion of acid salts, being therefore an indirect expression of renal retention.

Glucose in the Blood.—B. Purjesz

(Wien. Klin. Woch., 1913, XXVI, 1420) finds glucose in the blood normally in quantities varying between .0451 to .087 gm. per cent. The greater part normally is found in the plasma, and only a trace in the erythrocytes.

Sugar may be increased in the latter during febrile periods, while with increasing activity of the thyroid gland the quantity of sugar in the blood is very small.

Subcutaneous injections of pituitary extract from the infundibular portion increases the blood sugar.

In Addison's disease the sugar content is low.

In cases with hypertension, a hyperglycemia is present and also in pneumonia with fever, but totally lacking in miliary tbc. and typhoid fever.

Salvarsan and the Kidneys.—Loewy and Wechselman (Berlin Klin. Woch., 1913, I, 1342), in experiments on dogs, believe Salvarsan has an injurious action on the kidneys, especially if they are previously damaged by the administration of mercury.

The injurious action is upon the water-eliminating function and the absence of albumin is not to be relied upon as a test for a damaged kidney after a Salvarsan treatment, because the urine may remain free from albumin and still the kidneys be damaged.

The water metabolism is the important thing to note for therapeutic purposes, and Wechselman warns against combined mercurial and Salvarsan practice.

Thrombosis and Embolism in the Puerperal Period.—Junge (Archiv. f. Gynäkologie, 1912, Band. XCVI, Heft. 2) believes that alterations or injuries to the endothelium of the blood vessels, producing interruption of the circulation, is the most important factor in the causation of

thrombosis. Such lesions are present in 26 per cent of all puerperal cases.

Multiparae at middle life are most apt to develop this lesion, and it occurs in them in 71 per cent of all cases. Puerperal thrombosis develops in 74 per cent of multiparae, and of these 72 per cent are cases of varicies.

The saphenous vein is most often affected in the early puerperal period, the femoral in the latter portion of the period, and in the mid-portion, the pelvic veins.

The process begins with a slight elevation of temperature, and the highest temperature occurs when the femoral vein is involved. Saphenous thrombosis affords the best prognosis, while in the deeper veins the danger of pulmonary embolism is more likely, although this is comparatively rare, being about only .04 per cent in all cases so involved.

News Notes

Dr. Merritt Stenhouse, recently an interne in the Mercy hospital, has been appointed assistant surgeon in the United States navy. He is now located at the hospital in Las Animas, Colo.

Dr. George M. Blickensderfer is taking an extended trip through Canada and the eastern part of the United States. He recently underwent a gastroenterostomy for duodenal ulcer and is now recuperating from the effects of a long illness.

Dr. J. W. Shields, has located in Grand Junction and will limit his work to the diseases of the eye, ear, nose and throat. He has taken offices with Dr. Needham.

Dr. A. C. Magruder was elected president of the El Paso County Medical Society at the annual meeting held at the El Paso Club. Dr. Beverly Tucker was elected vice president and Dr. E. L. Timmons, secretary and treasurer. The meeting, which was informal, was one of the largest-attended of the year. A few technical questions were discussed, but the meeting was largely social.

Dr. and Mrs. Kirkland of Fort Collins have gone abroad for three months' stay. The principal object of the trip is attendance upon the session of the Clinical Congress of the Surgeons of North America.

Dr. Abijah Johnson died in Glendale, California, May 23. Dr. Johnson formerly practiced in Montrose, Colorado. He was the father of Dr. Carl Johnson, who many members of the State Medical Society will remember. He was born in 1837, came to Colorado in 1880 and settled in Castle Rock. Five years later Doc-

tor removed to Montrose where he practiced for many years.

About forty of the physicians of Colorado Springs have subscribed liberally to the budget of the Chamber of Commerce, stipulating that their subscriptions shall be devoted to advertising the climatic advantages of Colorado Springs.

Dr. George H. Curfman, Salida, returned recently from a hurried trip to Maryville, Missouri, where he was called by the illness of his brother.

Twin girls were born to Dr. R. B. Harrington and wife on May 28. Dr. Harrington is the secretary of the Mesa county society. He and his wife are Western slope boosters.

Dr. H. N. Krohn has returned after spending four months in Eastern clinics. While away Dr. Krohn spent the greater part of his time studying genito urinary work and cystoscopy and to this work he will devote himself particularly in the future.

Dr. Barbour, Rocky Ford, has been taking a vacation in California.

Dr. Frank Finney, La Junta, left May 1 for New York city, where he visited at the home of his daughter, Mrs. Jesse Williams.

Dr. Philip Hillkowitz and Mrs. Minnie Freshman were married June 5. During their brief honeymoon the doctor wrote the editorial on Noguchi which appears in this issue. His being able to do this speaks well for the patience of his bride and gives us an earnest that his new relations and obligations will not limit his frequent indulgence in medical writing.

Dr. J. W. Rambo of Cañon City has been seriously ill at his home the past seven weeks. He is still confined to bed with the outcome uncertain.

Dr. T. D. Palmer of Cañon City, one of the old timers in the state, and for a number of years physician to the state penitentiary, suffered a cerebral hemorrhage two weeks ago, and is not expected to live.

Dr. A. T. Clarke of Cañon City has returned to his old home in Nova Scotia, where he expects to spend the year.

Dr. R. E. Holmes has been appointed physician to the Odd Fellows' home at Cañon City.

Doctors Thos. L. Taylor of Laird, Colorado, and L. Garcia of Idalia, expect to become members of the Eastern Colorado Medical Association at the next meeting. Dr. Thomas L. Taylor, recently located at Laird, Colorado, from Kansas City.

Dr. Purdue, who was formerly located at Haxtum, Colorado, is now practicing at Yuma, Colorado.

Dr. C. C. Crawford of Wray, Colorado, has moved into a new office.

Dr. C. T. Burnett, Boulder, expects to leave for post-graduate study in Vienna the latter part of August or early in September.

At the April meeting of the Colorado Ophthalmological Society, in Denver, Dr. Frank R. Spencer of Boulder was appointed chairman and Dr. T. E. Carmody of Denver, secretary of the eye, ear, nose and throat section of the State Society. The program for the September meeting will be arranged by the chairman and secretary.

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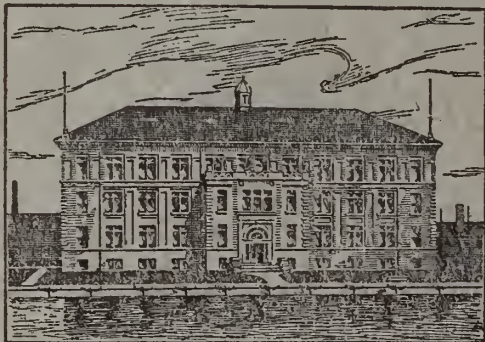
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NO. 7

Editorial Comment

THE BOULDER MEETING.

Members of the Colorado State Medical Society should already be making plans for attendance at the meeting of the Society in Boulder, on September 8th, 9th and 10th, 1914. Those who practice in Denver should resolutely close their office doors during these three days, and by no means attempt to combine regular work with attendance at the meeting. In addition to the scientific program, the entertainment committee has been busily arranging for social events.

Monday evening is usually set aside for a meeting of the House of Delegates. On Tuesday night it is planned to have a barbecue and barn dance at the Chautauqua grounds. This in itself is a most charming place, with grassy banks, shrubs and trees and beautiful views of mountain and valley.

Adjoining the Chautauqua grounds is the new golf course, which will be open to visiting members.

On Wednesday, the Regents of the University will give a luncheon to the members of the State Medical Society; and half of the day will be spent on the University Campus. This will give our members an excellent opportunity to become

acquainted with the new President of the University, Dr. Farrand, who is an enthusiastic medical man, especially in regard to Public Health matters.

Wednesday evening the President of the Society will give a reception and ball for the visiting members and guests.

On Thursday there will be auto parties to Boulder Falls and to the beautiful valley lakes.

The schedule of entertainments for the visiting ladies has not been completely arranged. The intention is to have auto trips, afternoon teas, receptions and musicales, which will furnish ample diversion for the fair guests.

The committee thinks that it may be best to dispense with the usual banquet, on account of there being no other evening available except Thursday evening. They will be glad to arrange for it on that evening if it seems desirable, but the usual experience, of members leaving for their homes as soon as the scientific session is over, makes this questionable.

DR. MELVILLE BLACK SOUNDS THE REVEILLE.

We do not propose to let you forget that the date of the Annual Meeting of the State Society is fast approaching. It is less than two months away. The date

is September 8th, 9th and 10th and the place is Boulder.

The program will be published in the August number of this journal, and will be found to be of interest from start to finish. The address by our guest, the famous Hideyo Noguchi, of the Rockefeller Institute of New York, will of itself be sufficient reason for your attendance.

Every member who goes to this meeting will take away something of value. The man who has never attended one of these meetings does not realize how much he has missed. There certainly is not a man of any prominence in the state who does not attend the meetings regularly. This type of man progresses. Whenever a man becomes so satisfied with himself that he thinks he cannot learn anything from his confreres, he begins to deteriorate. The majority of men, however, who do not attend these meetings feel that they cannot get away from their work. This is a great mistake. Time lost in attending a meeting of the State Society is time gained. Patients who call and find their physician so engaged respect him more than ever. The man who is always at home is regarded as a drudge and as one who is behind the times. To those who have never attended one of our Annual Meetings we extend a most urgent invitation. To those who have attended we extend the same invitation, but we know it is not needed, for they will attend unless something unusual prevents.

MELVILLE BLACK,

See'y Colo. State Medical Society.

PAPERS FOR THE ANNUAL MEETING.

The August issue of this journal will print short abstracts of the papers which are to be read on September 8th, 9th and 10th at Boulder. Abstracts should be sent so as to reach Dr. Aubrey Williams or the Editor of Colorado Medicine not later

than the 1st of August, and should range in length from one hundred to two hundred words.

The by-laws of the Society require that no paper read at the annual meeting, except those of the President and appointed orators, shall occupy more than fifteen minutes in its delivery. This rule is made for the benefit of all the members, and should be borne in mind when papers are being written and revised. The only way in which a writer can determine how much time will be required for the reading of his paper is to read either the whole paper, or at least several pages of it, aloud, with the proper deliberation and emphasis required for public delivery, noting by the clock the time actually employed. If this were done beforehand in every case, it would not so often be necessary for an essayist to stop when half way through his discourse, or for sympathetic fellow members to move that the Chairman extend the time.

It is perhaps hardly necessary to remind most writers of papers that the by-laws exclude papers which have been previously published, and further require that all papers shall at once become the property of the State Society, and shall be deposited with the Secretary when read.

PUBLIC HEALTH IN PUEBLO.

It is one of the ironies of national inconsistency that the country which by the control of disease has accomplished the making of the Panama Canal shows within its own borders many too conspicuous examples of poor administration of the public health. The blame for this has in part rested with physicians who have neglected the problems of their communities, in part with an uneducated public opinion.

The physicians of Pueblo, after distinguishing themselves by their zeal in pro-

professional organization, have lately come to the front by vigorous promotion of improved public health administration. A year or so ago the Pueblo Medical Society informed the Pueblo City Commissioners that it was their unanimous opinion that a physician should be placed in charge of the Public Health Department. Effect was given to this recommendation on 1st January last, and the City Commissioners recently took the very sensible step of inviting the Medical Society to investigate the health conditions of the city and to recommend any changes which might seem desirable. A committee of three physicians was appointed, and their detailed report has received full publicity in the Pueblo newspapers.

The new control seems to have resulted in a marked increase of efficiency. A bacteriological laboratory has been established, which undertakes diphtheria cultures, sputum examination for tuberculosis, milk analysis, examination of the spinal fluid, and such other investigations as may be necessary. The investigating committee, not content with mere approval of the existing order of things, presented a long list of recommendations as to further improvement. These included: (1) condensed monthly reports in the local newspapers as to health conditions; (2) an educational campaign against tuberculosis; (3) an efficient system of meat inspection; (4) coöperation of the police with the department of sanitary inspection; (5) greater strictness in the notification of contagious diseases, births, deaths, etc.; and (6) publication in the newspapers, where practicable, of the substance of papers of public interest read before the Pueblo Medical Society.

It may be that there are other cities in the state which could profit by Pueblo's example.

R. H.

HONORS TO COLORADO PHYSICIANS.

A thrill of pride has been felt by the profession of this state on learning of the distinguished honors accorded to several of its members at the recent national meetings. It is a source of great pleasure to Colorado Medicine to announce the election of Dr. Henry Sewall to the presidency of the American Climatological Association and vice presidency of the association of American Physicians; Dr. G. B. Packard as president of the American Orthopedic Association, and Dr. Robert Levy as president of the Laryngological Rhinological and Otological Society; Dr. Leonard Freeman is vice president of the Western Surgical Association. Dr. Gerald Webb occupies the presiding office in the American Association of Immunologists, and Dr. Charles A. Powers is councilor in the American Surgical Association.

Many posts of eminence have been held in the past by physicians from the Centennial State. That our commonwealth should receive such a large share of attention from the national medical bodies is certainly a just cause for exultation.

We are not overshooting the mark in asserting that some of the best medical men of the country are located in our midst and that our medical men in general compare favorably with those located in the centers of medical education. Is it due to the fact that our beautiful climate has lured the flower of the profession to settle among us? Or is it the scientific atmosphere, the spirit of friendly fellowship with our professional brethren that acts as a mutual stimulus for bettering our knowledge of the healing art?

Whichever it may be, may these honors bestowed on our fellows, while giving us cause for self congratulations, also lead us on to still better endeavors.

To the victors who come back to us crowned with the laurel wreath we say: Vivant, Crescant, Floreant.

P. H.

Original Articles

A BRIEF CONSIDERATION OF THE MORE COMMON DRUG ERUP- TIONS AND THEIR BEAR- ING ON DIAGNOSIS.*

G. P. LINGENFELTER, M.D.
DENVER, COLO.

The subject which I have chosen for my remarks is one which should prove of interest to every practicing physician, whether his work lies along general or special lines. The unexpected and untoward effects following the internal administration, or external application, of drugs, are often a source of annoyance to both physician and patient, and when they take the form of a cutaneous eruption, are liable to occasion considerable anxiety and alarm to the patient and friends, and perhaps eventually tend to discredit the professional reputation of the physician, unless he is able to promptly diagnose and combat the trouble.

Hence an early recognition of the eruption will, by allaying the patient's apprehensions and tending towards a rapid cure of conditions by withdrawal of the drug, prove of extreme value.

That peculiarity of constitution which for want of a better name we call idiosyncrasy, undoubtedly forms one of the bugbears of therapeutics. Confident indeed is he who in any given case can assert that quinine, bromide or potassium iodide, or any one of a score or more of other drugs will not produce an eruption, which may appear suddenly, and with terrifying accuracy simulate the more infectious forms of zymotic disease.

Measles may thus be, and often has been, more than suspected until the fur-

ther progress of events cleared up the diagnosis. Scarlet fever has been pretty accurately indicated. Pustules have appeared bearing more than a fancied resemblance to smallpox or syphilis.

We can well imagine the consternation thus excited in individuals, families or schools: the probabilities of a rapidly spreading epidemic, with all its attendant evils, the sage council of confident laymen, the final arrival of the physician, and when at last the whole matter is explained that the drug ingested was the sole offender, the vials of wrath are apt to be turned upon the prescriber for ordering medicine, of the uncomfortable results of which he did not seem to be fully aware.

In most cases the intensity of the eruption is directly proportionate to the amount of the drug ingested, but there are numerous instances reported in which a relatively small dose and one incapable of producing any of the other untoward symptoms of the drug, has caused most severe skin lesions, and on the other hand, it has occasionally been found that after a large dose the same individual becomes immune. That indefinable something which we are pleased to call idiosyncrasy is perhaps brought more prominently to our notice in connection with drug eruptions than anywhere else in medicine. The question of diagnosis in eruptions resulting from external applications is usually quite easy; on the other hand, of a dermatitis from the internal administration of some drug may prove very difficult. Patent medicines and ointments and lotions of unknown formulae frequently give much trouble in this way.

A mere list of the various remedial agents, which applied externally or administered internally, have occasioned the appearance of more or less extensive dermal phenomena, is a formidable one. I shall, therefore, confine my remarks to

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those lesions produced by antipyrine, boric acid, bromides, iodine and their compounds.

Dr. L. Wickham of Paris reports a case which came to Fournier's department of the St. Louis Hospital, and states that all who observed it, declared at once it was a syphilitic roseola. The patient presented no other sign of syphilis and energetically denied the possibility. On further investigation it was found that the lesions had appeared following the ingestion, for two days, of two-gramme doses of antipyrine per day. Fournier also mentions a case of exanthem from this same drug, which completely simulated measles, with the exception of Koplik's spots, the fever, conjunctivitis, lachrymation and coryza being present.

Allen, in the *British Journal of Children's Diseases*, reports an instance where boric acid was given internally in a case of pyuria, to a little girl aged 3. The eruption appeared in one week and was noted first on the abdomen, chest, legs and arms in the order named, the face and neck escaping. The eruption was morbilliform in character, very like that in measles, consisting of reddish maculopapules, slightly raised above the surface. On pressure the lesions would disappear, leaving a blanched area and quickly reappear. On stopping the drug the rash disappeared in forty-eight hours. No brownish pigmentation or subsequent desquamation resulted, and the general condition quickly improved.

Both bromine and iodine and their compounds produce in susceptible persons eruptions of great diversity. With bromides the commonest form is an acne-like rash, which differs from the ordinary acne in being more generally distributed over the body, in the rapidity of its development, and the absence of comedones. A similar eruption is not uncommonly produced by the iodides, but the more

typical form is the bullous or vesicular. Gottheil, in the *Archives of Diagnosis*, 1908, reports as follows: "I have seen two 2-grain doses of potassium bromide cause a typical bromoderma tuberosum in an infant, and 3 grains of iodide of potassium occasion a marked acne in an adult. The amount of the medication, therefore, plays but a very small part in determining the appearance of the eruption."

It is very important to realize that any combination of iodine may produce iodism, as evidenced by citation of the following cases:

A drug clerk with a wound of the finger dressed it with iodoform gauze. The finger and back of hand became reddened, hot and swollen and covered with small vesicles within twenty-four hours. He called his family physician, who dressed the wound with a 50 per cent ichthyol lanolin ointment and iodoform gauze. The physician continued the same treatment, even after the dermatitis had spread over the face, arms and body. When I saw the case the patient presented a pitiable sight, the entire face, body and limbs being covered with crusts. He was greatly depressed, and the pulse feeble, although on brandy, whisky and digitalis for three days. The case was diagnosed as iodoform poisoning; treatment changed to boric soaks followed by boric ointment, and stimulation continued. Reaction occurred in twenty-four hours and was followed by steady improvement.

McKissack, in the *British Medical Journal*, 1906, reports two cases of potassium iodide poisoning.

Case I. Laborer, age 45, suffering from aortic incompetence, arteries sclerotic, liver slightly and spleen considerably enlarged, albuminuria and oedema of legs. No ascites present. Was given 5 grains potassium iodide three times daily and saline aperients for the bowels. The eruption appeared after six doses, equaling 30

grains of potassium iodide had been taken. The lesions consisted of raised, rather solid-feeling, circular vesicles, from 1-12 to $\frac{1}{4}$ inch in diameter, which developed rapidly upon the forehead, cheeks, chin and scalp, while single vesicles were scattered over neck, shoulders, forearms, wrists and backs of hands. The rest of the body was free. Each vesicle contained a turbid fluid, which soon became purulent, and was surrounded by a narrow, red areola.

No great pain or constitutional disturbance was noted, but the vesicles or pustules, as they soon became, rapidly increased in size and number, coalescing and spreading peripherally, until in some places they formed rings of vesicles, and in others masses of confluent blebs. The eruption continued for about a week, increasing in intensity, despite the fact that potassium iodide was stopped at once.

The treatment consisted of cessation of the drug, boric washes and poultices, and later saturated solution of picric acid to the affected areas. Elimination was pushed by salines and digitalis. Temperature slightly raised; only once or twice did it exceed 100 F. Began to slowly clear up in about ten days. No cicatrization followed.

Case II. This case was less severe. The patient took only four 5-grain powders of potassium iodide, which was followed by a crop of vesicles, of which a few became purulent; many became hemorrhagic, together with considerable enlargement of both parotids and slight pyrexia.

This patient was suffering from osteo arthritis, but the heart and kidneys were free from diseases in this case. All vesicles eventually healed without leaving any trace.

It is to be noted that when the iodide eruptions are manifest the other symptoms of iodism are usually absent. The more serious of the two cases here record-

ed support this statement, while the milder one showed one other symptom, viz., enlarged parotid glands. While there can be no doubt that individuals differ greatly in their susceptibility to the toxic effects of bromine and iodine, that was only one factor in the problem. It is quite clear that in addition to individual susceptibility another factor existed, which was not quite so much beyond control as idiosyncrasy, and that was imperfect elimination of the drug. If, from any cause, iodine or bromine has been ingested and is allowed to accumulate in the body through failure of the eliminating organs, even a very small quantity may be sufficient to produce toxic symptoms in susceptible persons. In the first case this was obviously the cause, the heart, kidneys and liver being defective. In the other case, though there was no apparent disease of these organs, the presence of the arthritis was an evidence of disturbed metabolism and probably of defective elimination. It is then imperative, when the functions of elimination are known to be feeble, to begin the administration of bromides or iodides very cautiously and to give careful attention to the action of the kidneys, bowels and skin.

I desire to report the following case, which occurred in my own practice, because the lesions resemble very much those described in the first case of iodide poisoning reported, and to present some pictures illustrating the lesions.

W. J. W., white, age 65, occupation hide broker. Family history, excellent; personal history, the usual diseases of childhood; typhoid at the age of 16; cholera at the age of 35, followed five years later by smallpox; at the age of 59 the patient was confined to bed about ten days with an attack of rheumatism. About one year later slight deafness began to be manifest.

In April, 1910, albumen was found in

the urine, and he was placed on a diet and underwent a course of treatment by the family physician. Up to this time the patient had been a heavy drinker, since then a total abstainer.

Physical examination revealed a patient well developed and nourished, large, powerful physique, hypertrophy and dilatation of the heart, with valvular trouble in aortic and mitral valves. Lungs negative; abdomen soft and lax; no masses felt or tenderness noted. General physical condition below par, although attending to his daily occupation.

Urinalysis as follows: Color, amber; reaction, acid; Sp. G., 1.010; strong trace of albumen; no sugar or indican. Microscopic examination revealed hyaline casts and renal epithelium showing fatty degeneration.

Present illness: Eleven days before entering the hospital, on awakening in the morning found that hemorrhage of right conjunctiva had taken place during the night, and the sight was practically obliterated in that eye. He was treated by his family physician, who placed atropine solution in the eye and administered an iodine preparation said by the pharmaceutical house which manufactured it, to contain 21½ per cent free iodine. Improvement followed. Six days later a small pea-sized papule appeared on the left side of the nose; this bled a little when picked by the patient. From this the process spread until on entering the hospital, five days later, one-third of the lower portion of the nose and about one-half of the left cheek were involved, presenting a broken-down necrotic-looking, sloughing, central ulceration surrounded by an elevated, rolled-up periphery, looking like large blebs, that had become postular. On opening the blebs, only the minutest quantity of pus could be obtained and it was found that the lesions consisted of exuberant granulations, which bled readily and

were covered with a roof of dead epidermis. Cultures revealed staphylococcus aureus and streptococci.

On ulnar aspect of the dorsal surface of right and left hands was found a large hemorrhagic-looking pustule, surrounded by bright red areola, 1-1.6 inch in width. Several, much smaller, similar pustules were found on forehead, top of head (which was bald), on throat and chin and just posterior to the lobe of right ear.

Some of the 5-grain capsules which the patient had been taking were now obtained. The contents reacted to starch and made a perfect solution with alcohol. Repeated tests of the urine failed to show the presence of iodine.

From the best history obtainable, the patient had not taken any of the capsules for at least one week before entering the hospital. At no time did the temperature exceed 99 or fall below 97. Six days later there was but little change in the condition of the old lesions, though a few new ones appeared on the face, neck and scalp.

Four days later all lesions had enlarged considerably, peripherally, some new ones appearing on the mucous surface of the lips. Patient became somewhat irrational. Two days later the original lesions on nose and cheek began to heal, although the mental condition became worse, the patient gradually became comatose and incontinent, and died on the nineteenth day after admission to the hospital.

Post-mortem findings were interesting, showing how completely elimination was obliterated. Stones in the pelvis and calices of the right kidney; pyonephrosis, chronic nephritis and hyperplasia of the right kidney, agenesis of the left kidney; obliterated left ureter; arteriosclerosis; fibrous and varicose endocarditis of the aortic valve; defective closure of the foramen ovale; chronic adhesive myocarditis, hypertrophy and dilatation of the heart;

emphysema and oedema of the lungs; areas of erosion in the mucosa of the caecum; cholelithiasis.

In conclusion, I wish to emphasize this element of truth that we, as physicians, should be on the lookout for such action and not be frightened into a wrong diagnosis of an infectious disease, and should warn the patient that possibly such condition might result.

REPORT OF AN UNUSUAL CASE.*

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The following case, which has been under my care, appears to be sufficiently unique to justify its selection for a report before this society.

W. D., aged 52, born in northern New York; resident in Colorado twenty-eight years; carpenter and contractor by occupation; family history good; father died at age of 93; mother at age of 87. Personal history negative, except for two attacks of typhoid fever, the first one occurring twenty-one years ago and ran a course of six weeks; the second attack seven years later was of a very severe and protracted type, confining the patient to his bed for sixteen weeks, although there is no history obtainable showing any unusual symptoms or complications during this illness.

Present illness: Was in apparent good health and led an active life until February 25, 1912, at which time I was consulted for what then appeared to be an unusually severe attack of trifacial neuralgia, involving the second branch of the fifth nerve, the pain being especially excruciating over the more prominent part of the left malar bone. On the following day the patient was much annoyed by a

pronounced increase of saliva. On the fourth day herpetic eruptions appeared on the nose, lips, tongue and palate, the pain and salivation being, at this time, increased. By the tenth day the lips and tongue were greatly swollen and covered with a thick, foul sordes, and pain so intense that relief was had only by large doses of morphia, and the saliva uncontrolled except with atropia, at times as much as 1-50 grain every eight hours being required. Patient could only take liquid food, and that with great distress in swallowing, due to the swollen and painful state of the pharynx. Temperature $\frac{1}{2}$ to 1 degree above normal. No enlargement of the lymphatics detected in any portion of the body.

About the third week of the illness the patient experienced sharp pain over the epigastric region, followed by nausea and vomiting of some blood, and practically at the same time a diarrhoea with slightly bloody stools. The gastro-intestinal symptoms lasted for three or four days. Otherwise the patient continued without any change of note until the 1st of April, when a general improvement was observed, the pain subsiding, the lips, tongue, palate and pharynx clearing, the salivary flow becoming normal. Discontinued my visits on April 12th, and patient went along in practically a normal state, except for slight pains in the head and throat until April 26th, when I was called again, and found much the same condition that obtained at the time of the outset of the first attack. This seizure ran for the most part a similar course, except for the appearance of a large pemphigoid eruption on the skin over the styloid process of the right ulna, the patient complaining greatly of pain at this point. The bleb contained a bloody, purulent fluid which, when discharged, left a circular depressed ulcer, painful and very slow to heal. This attack lasted until

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June 24th, from which date the patient was again free from any special trouble, until August 27th, when he was seized with the onset of the third attack, which proved practically the same as the previous two, except the development was more rapid, the symptoms not quite so severe, and there was no cutaneous lesion. This seizure lasted until November 6th, when visits were again discontinued and the patient was once more reasonably comfortable for a period of sixteen days, when he was taken with rapidly culminating symptoms of what proved more severe and protracted than any previous attack. Two weeks after the onset of this seizure a large eruption developed on the inner aspect of the right heel; this was larger, even more slow to heal, and if possible, more painful than the similar condition previously mentioned as occurring on the right wrist. In about the third week of this attack the patient's general condition became quite alarming, the lips, tongue, palate and pharynx dry and covered with a brown crust, pulse intermittent, retention of urine, mind confused, and at times patient was delirious from the pain in head, mostly at this period of a supra-orbital type, prostration extreme and the general aspect of the case one of profound toxemia. This condition remained until the early part of January, when the toxic condition improved, the mouth and throat became normal in appearance, but the pain and salivation were unabated. From January until the latter part of August the patient remained in much the same condition, varied, however, from time to time, by slight eruptions of the buccal mucous membrane, the more frequent location of these symptoms being the posterior portion of the hard palate. Since the first of September the patient has been practically free from all symptoms.

To recapitulate the symptoms in the order of their occurrence:

Pain.—Located at first along the second branch of the fifth nerve, later became general throughout the head and neck. In character, sharp and stabbing and of unbearable severity, unaffected by any measure or remedy used, except morphia and of this as much as 2 grains daily was at times necessary. During the height of the trouble the pain would be constant, as patient improved it would often be absent in the morning, coming on with regularity for several days at a time at 3 to 3:30 p. m., and lasting until relieved with opiate.

Salivation.—During the most severe periods of the attacks the saliva would fairly flow from the mouth when the patient was not under the effects of large doses of atropia, forty to sixty ounces of saliva being collected in twenty-four hours. The salivation would at times precede and at other times follow the onset of pain. Repeated chemical and microscopic examinations of this secretion revealed nothing materially different from normal saliva.

Eruptions.—The herpetic eruptions on the lips and mucous membrane of the mouth and throat would appear as a small circular inflamed area about $\frac{1}{2}$ cm. in diameter. At end of forty-eight hours it would show a grayish ulcerous surface of the tongue, and much of the pharynx would be covered with brownish crusts covering these ulcerous surfaces. The pemphigoid eruptions observed on right wrist and heel did, in each instance, after discharging their contents surface over with a hard, dry, firmly attached crust, which remained for a period of eight or ten days, finally loosening and leaving a rather deep, slow-healing ulcer.

Fever.—Temperature did not at any time show more, and usually less, than 1 degree of fever. During the past six months no rise of temperature above normal has been detected.

Gastro-intestinal Symptoms.—From the

onset of the trouble eighteen months ago there have been four attacks of gastrointestinal disturbances, characterized by acute epigastric pain, nausea, blood-stained vomit and diarrhoea with slightly bloody stools. These symptoms would each time cover a period of three to six days. At all other times the bowels had a tendency toward constipation. The appetite, when the mouth and throat would permit of taking food, was normal.

In the periods between seizures the patient rapidly regained lost weight. The mental condition was always normal, except when suffering great pain for an extended length of time.

Laboratory Notes.—Wassermann test gave a pronounced negative. Blood course showed reds 5,200,000; whites, 8,000; Hg., 94 per cent. Urine at all times normal.

Conclusion.—This case is evidently one of the trophoneurosis group, with tendency toward frequent relapse, as well as spontaneous improvement.

DISCUSSION.

J. N. Hall, Denver: I am very glad to hear so complete a report of such an unusual case. I do not know of anything more difficult for the average man than a diagnosis in just such a situation as he had here. The doctor and I at the time I saw the case in Pueblo spent a good deal of time in going over what it could possibly be. I think, if I heard correctly, that the doctor did not mention that in the secretions from the ulcer we found the pneumococcus, so common in ulcers of the mouth that it is not regarded as being a specific matter at all in any ulcer we find.

Before speaking of the case directly I should like to mention how frequent it is to have some sort of herpetic trouble which is difficult in the way of diagnosis. Among those that I have seen, are, for instance, herpes ophthalmicus, mistaken for erysipelas or inflammation of the tear duct, or a half dozen other things.

I remember at one time an aural specialist sent a case to me with a pain about the ear which he said had nothing to do with the internal ear, but which turned out eventually to be, as we both found, a case of herpes.

A physician came to me one day with an eruption covering the whole distance from the fourth to the tenth rib, as large a surface as the Journal of the American Medical Association, a solid mass of herpetic vesicles. It presented such a startling look that I could not believe it was herpes.

I remember one patient who had seen a half dozen different physicians and come to no conclusion because each one gave him a different diagnosis. It was a case where it was necessary, if one were to satisfy him, to prove to him what the situation was. In one skin book that I had, there was an absolute picture of that man's condition—herpes of the sacro-iliac region. I happened to have a long-distance telephone call to answer at the time he came to see me, and I just got that book, and said: "Young man, look at this book while I go and answer that telephone call." When I got back he said, "Why, Doctor, that is what I have got!" It was much more convenient and better to have him make his own diagnosis because if I had told him the same thing he would not have believed it. After he had made the diagnosis himself he was all right.

From what I know of these cases, the types that come in the mouth and pharynx, I think in general do not have extremely severe pain, such as that in herpes zoster in old people, with continuous neuralgic pain. I have seen one or two people die from exhaustion from the long-continued pain that morphine would not completely control.

These cases that come on the mouth and pharynx violate the old-fashioned rule, as they are often bilateral, and they violate another rule, in that they may recur. There is no question in my mind that the diagnosis was absolutely correct, that it was a trophic disturbance along the herpetic line, and I think all of the symptoms may be traced to the same source. I was puzzled a good deal as to why this patient had continuous vomiting, and I have not had an opportunity to go over that part of the case with Dr. Black. I think if you will only consider the intimate relationship which exists—which all of the younger men know a good deal better than I, because they have looked at their anatomy more recently—between the ninth, tenth and eleventh nerves, and remember that they all run together, and were all formerly spoken of as one nerve, you can readily see that if the trophic disturbance comes in such a way as to affect the tongue and the palate through the glosso-pharyngeal nerve, you can easily have involvement of the vagus.

One thing that rather made me waver for a time in the diagnosis was the appearance of a number of definite pemphigus lesions, in two or three different places. I am confident in my own mind that the lesions in the mouth were not pemphigus, but they were distantly related to trophic disturbances in another part of the body, but not of exactly the same type. The reason for saying that is that although, so far as I know, I have never seen a case of pemphigus of the mouth, the books all state that pemphigus leaves a severe scar or adhesions, and to the best of my knowledge—and I think Dr. Black will confirm me—there were no adhesions left in the mouth.

One thing Dr. Levy calls my attention to, and that is with reference to cases of this sort in women, where the disease is associated with severe and long-continued infection in the

urine. I know from the report and I know also from the fact that I examined a specimen, that there was nothing of that sort in this particular case.

I think the doctor deserves a good deal of credit for working out so puzzling a case as that was. I never saw one that was less satisfactory, and I know Dr. Black never saw one that was less satisfactory to him.

HISTOPATHOLOGY OF THE FAUCIAL TONSIL.*

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Of the lymphatic structures of the body which undergo pathological change, the faucial tonsil is probably the most frequently affected, next the vermiform appendix, and third the pharyngeal tonsil.

The relation of the lymphoid structures in the upper respiratory tract is better understood if we first note their development. The order of development and retrogression of the lymphatic structures is pharyngeal tonsil, faucial tonsil, lingual tonsil and laryngeal tonsil.

The pharyngeal tonsil, which is found in the lower forms of life as in reptiles and birds, makes its appearance in man probably about the fifth or sixth week of fetal life. G. Killian has shown this tonsil to be associated in development with the vestigial space known as the bursa pharyngea embryonalis.

The origin of this bursa is not known, but Linck states that in its pure form it belongs entirely to embryonic life. It is also posterior and independent of Rathke's pouch, and Patterson warns especially against confusing it with the bursa pharyngea of Schwabach, which is simply a space in the center of the pharyngeal tonsil, produced chiefly by pathological changes, and persisting frequently into adult life. The pharyngeal tonsil prob-

ably has very little if any function after the first year of extrauterine life.

The faucial or palatal tonsil appears in the fetus somewhat later, probably about the seventh or eighth week or possibly even earlier. It is developed from the second gill cleft. In embryos of four or five months we find the shallow pouch which represents this cleft bounded in part by the arcus palatoglossus which is a survival of the second branchial arch, and partly covered by the uvula, and continued on to the wall of the pharynx as a fold, the plica triangularis of His. This forms the dorsal boundary of the pouch. The pouch is lined by mucous membrane which is continuous with that of the pharynx.

About the third month, according to Stohr, the tonsil is composed of stratified epithelium resting on the mesenchyma without leucocytes. At about the fourth month (McMurrich) solid buds begin to grow from the epithelium into the subjacent mesenchyma, and depressions appear on the surface of this region. Later the buds become hollow by contraction and cornification of their central cells. These spaces later communicate with the depressions to form the crypts.

During this period the lymphocytes collect in the mesenchyma and congregate in small numbers to form the lymph follicles. Whether the lymphocytes are derived from the epithelium or from the blood vessels is as yet a disputed point.

Although the tonsil may, because of the pathological conditions, completely fill the fossa, it usually leaves a space, the supratonsillar fossa above, which represents the remains of the second branchial furrow. Rosenmüller's groove or fossa is also a remains of this furrow.

The faucial tonsil resembles the lymph glands more closely than any of the other lymphoid tissues in shape and structure, having a capsule (although not com-

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plete), fibrous trabeculae, and adenoid nests, and being richly supplied with lymph vessels and lymph spaces.

It is so placed that it can hypertrophy without making pressure upon any bony structure, although the mandible is sometimes thrown forward, giving a prognathous appearance, to relieve pressure on the inflamed tissue. This occurs especially in acute, but may also be found frequently in chronic inflammatory conditions.

The pharyngeal tonsil, on the other hand, has a bony base and must necessarily hypertrophy downward and forward; while the lingual tonsil hypertrophies upward and backward, as it cannot penetrate the fibrous tissue which might be called a capsule overlying the muscular tissue of the base of the tongue.

The faucial tonsil loses its function somewhere between the second and seventh year.

The lingual tonsil appears about the fourth month and is developed by the laying down of round cells around mucous glands at the base of the tongue. Later, about the eighth month, the round cells are also found in the connective tissue surrounding these glands. With the lingual tonsil, as with the faucial, it is a question at what age it ceases to functionate, but probably about the fifteenth year.

The laryngeal tonsil, as it is sometimes called, is simply the vestigial remains of the air sac found in anthropoid apes, and is known as the appendix of the ventricle of the larynx. It is stated by Citelli that this organ is not found in the human fetus but makes its appearance between the third and fourth years of life. It probably functionates until about the thirtieth year, when retrogression begins, although not completed until the fiftieth year.

It will be seen by the foregoing that while we have all these lymphoid structures, their periods of activity are not coincident, but successive or slightly over-

lapping, and, while the pharyngeal is retrogressing and probably also the faucial, the lingual and laryngeal are reaching the height of activity and beginning development respectively.

The faucial tonsil in its primitive form is simply a lymphoid lining of the furrow (fossa tonsillaris) remaining from the second branchial arch. As we pass to the higher forms, e. g., the rabbit, we find this tissue as a single nodule. It becomes larger and more specialized as we ascend in type, as in the ox and sheep; and we find an attempt to divide into lobes which, according to Hammar, is the normal condition in man during development, although later the septum disappears and the lobes blend. This latter condition he states to represent full development, but it would seem to be a step toward retrogression. These lobes are at times blended only at the base, as the throat surgeon finds in some cases when, on removal of the instrument with the enucleated mass, he simply has one lobe, usually the superior.

The superior lobe has attained, according to Patterson, its full growth at birth, while the inferior lobe may increase in size. Thus J. Killian states that a hypertrophied tonsil at the end of the first year is composed entirely of middle and inferior portions. Although this may be true at the end of the first year, as to which I cannot speak from experience, it is certainly not true from the third year on, as the superior lobe is, in most cases, much larger than the inferior.

The epithelial covering of the tonsil is of the stratified variety, as is that lining the crypts.

We have found the lining of the crypts deficient in many cases, and have drawn the conclusion that in breaking through the cornified cells from the center of the developing tonsil to the depressions on the surface, small areas are left which are

devoid of epithelium and do not receive the covering. It has been furthermore noted that there are no glands in the tissue underlying these areas. It may be said that the epithelium has been destroyed by infection, pressure of a necrotic plug, etc., but the second at least would not be applicable to the younger cases, as you do not find caseous masses in the tonsils of young children, and only superficial plugs in cases of acute infection.

In adults we frequently find in the crypts plugs composed of leucocytes, epithelium, bacteria, and disorganized tissue. We may question why these masses are retained in the crypts. The explanation given by most authors is that of closure of the mouths of the crypts, and the condition has been treated by slitting the crypt, cauterizing deeply into the crypt so as to obliterate, etc.*

This explanation is not sufficient, for many of us have seen these masses protruding from the opening and yet they are not expelled, so, while not denying this, we believe that the lack of mucus to lubricate the crypt walls accounts in a large degree for the condition, and furthermore that the plug, resembling a scab, clings to the tissue devoid of an epithelial covering as it does in the nose, on the skin and elsewhere when it is not brushed off. (Fig. I.)

We must not forget that hypertrophy of the muscular tissue in the pillars and overlying the crypt openings may prevent a plug being expelled from even a normal crypt.

It is well known that this plugged condition of the superior crypt of the tonsil



FIG. I

Crypt with plug protruding, also dilated space below surface with absence of epithelium. Remainder of crypt normal except lack of epithelium in places.

opening into the supra-tonsillar fossa is a great source of trouble, and the cause of probably 95% to 98% of all peritonsillar abscesses. The drainage of the crypts in the inferior lobe and the most inferior of those in the superior is favored by gravity and negative pressure during the act of swallowing.

We have also known for some time that removal of the upper lobe is sufficient to allow the remainder of the tonsil to re-

turn to normal in the great majority of cases. We furthermore have observed and have recently had our attention called by Sluder to the fact that the adenoid tissue from the lingual tonsil migrates into the fossa tonsillaris after complete removal.

As regards the effect of a pathological condition of the tonsil upon the general health, this is easily understood after examination of a number of diseased organs, and upon considering the lymph vessels of the tonsil and those of the base of the tongue which drain the lingual tonsil into the superior deep cervical chain of glands.

Although our investigations have just commenced, we have noted a number of changes in the tonsil, its capsule, etc., most of which have been found by other observers. Thus far only 35 pairs of tonsils have been completely examined, although we had expected to have a very much larger number to report at this time. The ages of the patients vary from 2½ to 28 years. The majority were removed by the modified Sluder method, although several were removed with the knife and

snare. Most of them had not been operated upon before, but three had had tonsillotomy performed.

They were removed for various reasons: first and most common, repeated attacks of follicular tonsillitis with glandular enlargement; next, rheumatism associated with attacks of tonsillitis; endocarditis; and, in one case, anemia, the cause of which seemed to be diseased faucial and pharyngeal tonsils.

On examination we found destruction of the epithelium upon the surface and in the crypts. In the cases which had previously had tonsillotomy performed, it was found that there had been no regeneration.

The older the patient the less adenoid tissue and the more connective tissue. The greater the number of attacks of tonsillitis or abscess, the greater the amount of connective tissue. (Fig. III.)

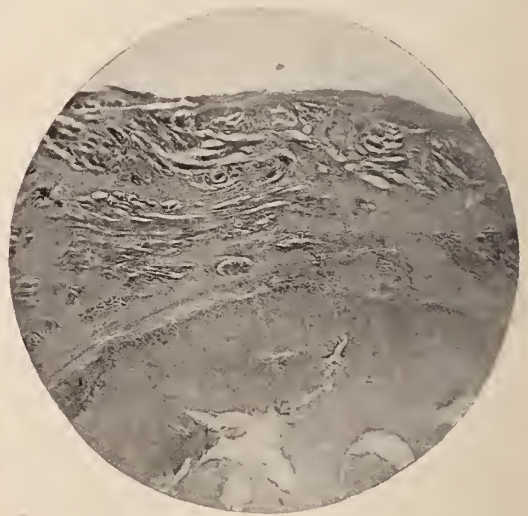


FIG. III.

Markedly thickened capsule. Connective tissue had replaced adenoid tissue in this tonsil.

Abscess within the tonsil (Fig. IV.) was found in two cases, one of which had been running a temperature for months, and has cleared up entirely since operation.

Diplococci and streptococci were found



FIG. II.

Epithelium with connective tissue columns. Adenoid tissue within connective tissue. From patient aged six.

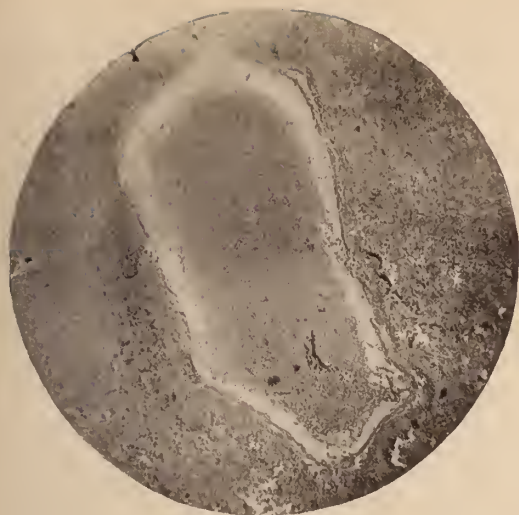


FIG. IV.

Degenerated area in tonsil. Necrotic tissue abscess.

in all cases examined. No tubercle bacilli were found and no other evidence of tuberculosis.

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DISCUSSION.

Robert Levy, Denver: It seems to me that a word or two might be said in reference to this paper, especially in commendation of the work Doctor Carmody is doing. In this state, where everything is along the line of purely practical results, we are apt to lose sight of the fact that underlying the practical side of the work is this purely scientific fundamental work, and Doctor Carmody is to be congratulated upon the courage that he has had to take up purely scientific work while conducting a very active and busy practice.

I was called out just as the reader began his paper, and I am not sure that he made reference to some previous work that had been done in the histopathology of the tonsil. I recall notably the work of Doctor Beck of Chicago,

who has devoted a good deal of time to this sort of investigation.

As a practical result of some of his work he found that many of the conditions for which we treated tonsils by excision might be corrected by irrigation; that is to say, by cleansing the crypts, following which he injected a preparation of bismuth paste in fairly liquid proportions. He injected this emulsion of bismuth into the crypts of the tonsils and obtained a very satisfactory result in certain chronic inflammatory conditions.

I gather from the reader that he had made some search for tubercle bacilli in some of the sections. It is almost impossible to determine by sectioning only the presence of tubercle bacilli. The pathologic changes of tuberculosis are not infrequently seen in so-called tuberculous tonsils, but the tubercle bacilli are not frequently found. There are a number of reasons for this. One practical reason is the fact that tubercle bacilli enter the tonsil and pass directly through without infecting it. George Wood of Philadelphia proved this conclusively. In some of his work he even found the tubercle bacilli passing through, and in many instances he found tuberculous involvement of subadjacent glands without involvement of the tonsil.

In order to determine the tuberculous nature of a tonsil it is not only necessary to make sections and attempt to find a pathological change in the cells, but it is often necessary to make use of animal experimentation by using an emulsion of the tonsil and thus proving the presence of tuberculosis.

J. A. Patterson, Colorado Springs: It seems to me Doctor Beck's idea, as explained by Doctor Levy, would be a step backward. As Doctor Levy knows, before tonsillectomy was perfected in its present form we used to treat those crypts. We have had instruments devised for going into the crypt and for opening it up entirely, so as to get perfect drainage. Bismuth and all other kinds of mixtures that could possibly be found were carried to the bottom of the crypt, but never cured any case that I have ever seen.

James J. Pattée, Pueblo: Study of the pathology of the tonsils has been taken up in earnest by a number of investigators, and it is only by such study and the conclusions arrived at, that clinicians will be able to judge very accurately with reference to the tonsils, because the appearance of a tonsil may fail to signify the true meaning of its pathology. As yet we must look largely to the clinical history, which is of the utmost importance. For instance, it is difficult to say from the appearance alone whether a tonsil is tuberculous or not, and even in cases in which it has been established beyond a doubt that the tonsil is tuberculous, there was nothing in the appearance to indicate the fact. It has been well established that over 5 per cent of the tonsils in children are tuberculous. Of course, from such tonsils a child could develop tuberculosis in other tissue. In other cases, tonsils have been the avenue of infection of other tissue without the tonsils themselves becoming in-

volved. Such facts establish the importance of the tonsils as portals of infection.

Dr. D. J. Davis of Chicago has recently studied the nature of tonsillar infections, with special reference to arthritis. For years general physicians have more or less loosely connected rheumatism with sore throat. Doctor Davis made a study of forty-two cases of arthritis, thirty-eight of these showing streptococci. The arthritis appeared to originate from the tonsils for the following reasons: First, many of the attacks of arthritis were accompanied by tonsillitis at the outset; second, tonsillectomy generally resulted in cure of the joint trouble; third, in a very limited number, tonsillectomy produced an arthritis following operation; fourth, salicylates had no effect upon the arthritis; fifth, streptococci from the throat injected into animals produced arthritis. These facts are very helpful to us in establishing the relation between tonsil infection and arthritis.

I believe that there is a physiological enlargement of the tonsil during adolescence. These tonsils are too frequently removed; in fact, too much stress is placed upon the size of tonsils and as a consequence there are too many large tonsils removed and too many small tonsils permitted to remain.

Doctor Levy, several years ago, called the attention of the profession to the fact that a tonsil might be tuberculous without having visible signs, and it is a fact that a large percentage of tonsil troubles are found in the small diseased tonsil or the one that is submerged, rather than in the large, naked, discrete tonsil which the profession and laity so frequently regard as calling for removal.

I wish to emphasize the point that Doctor Carmody made with reference to the mucous membrane lining the crypts. This membrane has no subepithelial tissue, consequently it will not withstand inflammation after a single attack. The barrier is gone, and the gland tissue is open to infection.

William N. Beggs, Denver: The discussion seems to have taken a tendency beyond the consideration of tuberculous tonsils. It strikes me it would be advisable to clearly define what you mean by a tuberculous tonsil. The demonstration of tubercle bacilli in the tonsil, say, by inoculating a guinea pig with emulsion of the same, is, I think, not sufficient to prove that the tonsil is tuberculous. As Doctor Levy has stated, it has been shown that the tonsil is a portal of infection of various kinds, and the tubercle bacilli may pass through the tonsil without producing anatomical alterations in the tonsil. I take it that unless we have anatomical alterations in the tonsil, we cannot properly speak of a tuberculous tonsil any more than we can speak of a person who has suffered an attack of typhoid fever and still carries the germs of typhoid in his intestinal tract (that is, is known as a typhoid carrier) as a typhoid patient any longer. The same thing is true of diphtheria. We might speak of these tonsils in which anatomical lesions are not present, and yet the presence of the tubercle bacillus is demonstrated by animal inoculation, as tubercle-bacillus-carrying tonsils.

Of course this may seem an academic discussion, as far as the results to the individual are concerned. And yet I take it, it is not quite so. It is easier to produce tuberculous lesions in guinea pigs than it is in the human being. The human being may stand for a great deal more infection with the tubercle bacillus, without developing the disease, than the animals used ordinarily for experimentation. So that the tonsil may carry tubercle bacilli, which may be demonstrated by animal experimentation, and yet that individual may never develop any tuberculous lesions either in the tonsil or any other part of the body. Of course the presence of the tubercle bacillus renders it possible—in fact, quite probable—that there will be tuberculous affections developed somewhere or other, either in the tonsil or in the lymphatic glands which are supplied from the tonsil. I merely mention the point so that it may clarify the situation a little.

Philip Hillkowitz, Denver: I would like to add a word of commendation on the scientific work that has been done by Doctor Carmody. When we take into consideration the amount of time and energy required to make sections of specimens we may well appreciate the labor that has been expended in this valuable study. It is all the more of value, because in this case you have a correlation of the histologist and the clinician. Occasionally the clinician is not familiar with the pathology or the histologic details of a diseased organ, and the histologist is not interested in it from a clinical standpoint. This is really the ideal method of study, because then the information that is gained from the microscopic examination may be of value to us in the clinical aspect.

The fact that the epithelium is lacking in the crypts or even on the surface of the tonsil is due to a great extent to the fact that the lymphoid tissue encroaches even in the normal tonsil on the epithelium, the round cells penetrating through the basal layer and traveling clear out to the surface. In some sections, therefore, one does not see the boundary line between the epithelium and the adenoid tissue underneath.

As regards the explanation of the failure of the plugs to be expelled from the crypts, while it may be true that the lack of moisture on account of the absence of glands is a potent factor, it seems to me that the absence of muscular tissue is also to be taken into consideration. The muscle bundles in the tonsil are separated from those crypts by wide collections of lymph nodes, and are therefore too far away to be of very effective use. It is true they are of some importance, for during the progress of deglutition, when the muscles functionate, the plugs are often expelled. To illustrate this point I may cite the intestine. There is a great deal of moisture in the intestine, but right under those crypts of Lieberkühn there is a muscular mucosa, and some distance toward the peritoneal side there are the longitudinal and the transverse muscular fibres. Now, I believe that the muscularis mucosa is of great aid in expelling any foreign body that is apt to linger in the intestine. In cases,

for instance, where there is muscular atrophy of the bowel, the contents are apt to remain immobile in spite of excessive moisture, remaining there. The same thing should be true in the tonsil, i. e., the absence of muscular tissue would favor the retention of secretions.

As regards tuberculosis of the tonsil, we cannot histologically diagnose tuberculosis unless we find some anatomical alteration. The anatomical alteration has to go far enough to produce a little focus of necrosis. There is, of course, a stage before that, but it would be impossible with our present state of knowledge to say definitely that the lesion is tuberculous; in other words, there may be tuberculosis of the tonsil before the histologist is able to recognize it.

F. E. Wallace, Pueblo: I wish to speak just a word in behalf of the specialist in cases in which the general practitioners have attempted to make a diagnosis. The specialist sometimes has a patient referred to him in which the statement has been made by the doctor to the parents that the child has enlarged tonsils or diseased tonsils and he must be operated upon. The operation time is set before the specialist has even seen the case.

I recently had the experience of going to a house to operate, and finding a case in which I did not think that the tonsil needed removing at all. The nurse and the anaesthetist were there, and everything was ready for the operation. If the practitioner is not capable of making a diagnosis he should not make the statement that the tonsil is diseased and should be removed. He should refer the case to the specialist and let him decide that point. I recall a case of suppuration of the tonsil in which the child had had symptoms for two or three weeks, had become very anemic and had developed (from the toxins which had been absorbed) a condition which very much resembled diphtheritic paralysis. The child was dragging the right foot a trifle in walking. When the case was referred to me I suspected diphtheria and isolated him at once and took a swab, but the examination was negative. When it came to operation, within two or three days, I found the tonsils honeycombed with pus cavities. This could not be told from the outside appearance. When the hook was put into the tonsil pus oozed out of all the crypts. The child was getting absorption there and had been for several weeks. In that particular case you could not tell from the general appearance that the tonsil was so diseased as we found it.

T. E. Carmody, Denver: I wish to thank all those who have discussed the paper, and wish to speak of Doctor Beck's work. I have not spoken of it in the paper because the work which has been mentioned would not come directly into this discussion until I pursue the investigation further. Doctor Beck's work has been of great value to the profession, and I have seen a number of sections in his office, one of an abscess within the tonsil that interested me very much, and more when I found that two of my series had abscesses within them.

As to the reports of tubercle bacilli, of course we have only gone to the extent of examining the tonsil for them. We have not made emulsions of the tissue for injection because we did not expect to go that far when we started. Later we decided to do so, but as yet have not come to it. That is along the line of Woods, and it is very important to us all.

With the emulsion a source of error might be that tubercle bacilli may be deposited upon the surface and yet be absent from the tissues.

As to chronic arthritis, before we took up this investigation I had two cases of chronic arthritis, one of which improved after the removal of the tonsil, while the other did not. In this series there are none, I believe, that have been examined up to date.

Mention has been made of large and small tonsils. Very frequently there is a question of removing large tonsils because they seem to be functioning, but most of them have a very small amount of normal adenoid tissue. In small tonsils we have a great deal of connective tissue, which has contracted and destroyed the adenoid tissue simply by pressure, so that they are of no value in resisting disease.

Doctor Hillkowitz spoke of the muscular fibres. I think he is entirely correct in that the lack of muscular fibres in the tonsils has a great deal to do with failure to expel the plugs, and the increase in muscular tissue in cases of hypertrophy of the pillars probably also keeps it from being expelled, because the pillars hang over the tonsil to a certain extent. This is the case, as we all know, in peritonsillar abscess.

The superior crypt of the tonsil leads up into the supratonsillar space, and the probabilities are that the contraction of the muscle causes it to discharge into this space, while the plica prevents evacuation of the fossa.

I have been asked as to the length of time that the tonsil functionates. I take from various sources giving the function of the tonsil, that it ceases at from the second to the seventh year. One author states that it does not cease until the fifteenth year, but most authorities agree that if there is any function of the tonsil—and we do not know yet what that is—it probably ceases somewhere between the second and the seventh years.

Of those whom Providence has qualified to make any additions to human knowledge, the number is extremely small, and what can be added by each single mind, even of this superior class, is very little; the greatest part of mankind must owe all their knowledge, and all must owe far the greater part of it, to the information of others. To understand the works of celebrated authors, to comprehend their systems and retain their reasonings, is a task more than equal to common intellects; and he is by no means to be accounted useless or idle who has stored his mind with acquired knowledge, and details it occasionally to others who have less leisure or weaker abilities.

—Samuel Johnson.

SOME RECENT METHODS OF INVASION OF THE URINARY BLADDER.*

**BY C. E. TENNANT, M.D.,
DENVER, COLO.**

It is not the writer's purpose in so brief an article to go into the merits of the perineal or suprapubic methods of bladder invasion. Both methods have their staunch advocates, and each favors his own method because of his skill or special dexterity with his chosen way of invading the bladder. I personally prefer the suprapubic route in the majority of cases, although I am quite ready to concede that there are certain well chosen cases which are more easily operated by the perineal method.

Cystostomy is an exceedingly old procedure, the need for its performance having been recognized early in the history of man. Paradoxical as it may seem, however, few organs have so taxed the surgical art as operations on the bladder, for, after all these years of bladder work, there has not been one particular method that has crystallized out of the many, as the one most popular and safe procedure.

No doubt the problem of infection and care of the large quantity of drainage has had much to do with this fact, and certain it is that this same problem of urinary drainage has much to do with the comfort of the patient during convalescence, to say nothing of the outcome of the case.

To leave a patient enfeebled with age, and prostrated from surgical shock, with the added burden of uncontrolled drainage, is not conducive to a speedy convalescence; nor is it likely to impress one with pleasant recollections of the hospital experience. Again, the absorption of urine as it flows over the freshly sectioned planes

of muscle and fascia, is no doubt a toxic factor quite equal to the toxemia induced from the infection.

Therefore if it is possible to restrain or eliminate this problem of uncontrolled drainage we would not only secure the comfort we all desire for our patients during their convalescence, but also reduce the mortality of the operations.

Tradition and custom have taught us that if we must open the bladder, we must also maintain this opening for drainage until nature has built about the opening a sufficient amount of granulation tissue to not only protect the patient from urinary absorption and infection, but also to eventually close the incision. And if, as is usual, the patient survives the first great wave of toxemia following the anesthetic and during the time the septic urine is pouring over the freshly opened wound margins, he is quite likely to recover, but only after a certain uncomfortable period of prolonged putrescent uriniferous baths.

To eliminate this unfavorable condition has been the effort of modern surgery, and several methods have been recently proposed which have for their purpose the immediate closure of the bladder following the operation.

Drainage is then instituted, either through the urethra by catheter, or by a small caliber rubber tube placed at one angle of the tightly closed incision, or by both catheter and rubber tube. Continuous through and through controlled washing is then instituted for the first twenty-four hours following the operation, this being for the purpose of preventing the accumulation of clots.

There are, of course, cases where on account of the severe and protracted bleeding, or high degree of infection, these methods would seem unwise to use, but in cases of stone and many cases of prostatectomy hemorrhage is slight, especially when sufficient care and good technique

*Read at the Annual Meeting of the Colorado State Medical Society, Oct. 7, 8, 9, 1913.

are used to accomplish the work. Judd¹ says, "Severe bleeding following a prostatectomy is due to the fact that some of the gland still remains, and like retained placenta, causes bleeding until all has been removed."

One of the recent methods of bladder invasion which has for its purpose the immediate closure of the bladder and control of urinary drainage is that reported by Judd² of the Mayo Clinic. He makes an ample suprapubic incision and thoroughly dissects off the fat and adventitious tissue from the bladder fundus, pushing the peritoneum well up above the suprapubic space. This permits the fundus being elevated above the abdominal incision, so the opened bladder margins come well out of the wound. The bladder being empty when it is incised, there is no soiling of the wound. After the prostate has been removed, the capsule should quickly contract if all the gland substance has been enucleated.

Irrigation is then commenced and continued until all clots are washed out, the bladder wall being held above the level of the suprapubic incision from the time it is made until the close of the operation. Irrigation is also continued during the time the bladder incision is being closed, interrupted sutures being passed through all coats of the bladder except the mucosa. These sutures close the bladder tightly. Judd suggests "before placing the last sutures the finger be introduced into the bladder to make sure there are no remaining clots." Should the oozing continue sufficient to cause clots to form in the urethral catheter, a small tube is introduced at the highest point in the incision (Squier) and irrigation made continuous, passing through the catheter and out the suprapubic tube.

Twenty years ago Harrington³ invaded the bladder by way of the *peritoneal cavity* and after a very considerable experience

with this method reported its application and technique. But it was some years after this before other operators would attempt the intraperitoneal method, and it is no doubt too little used today, being seldom referred to, and only then in such selected cases as neoplasms. Harrington, however, recommended the operation as being practicable for lithotomies, prostatic hypertrophies, and all other conditions necessitating cystotomies. That the bladder can be satisfactorily and safely invaded by the peritoneal route, even in the face of a considerable degree of infection, has been repeatedly proven by the writer⁴ and others⁵.

A *perineal* method has also been recently reported by Hertzler⁶, in which he does an immediate closure of the bladder following the operation; in some instances leaving a small drainage tube in place, and in others a catheter in the urethra; or he may use both drain and catheter, closing the remainder of the bladder incision. Either after or before the obliteration of the cavity, the drainage tube is passed through the incision into the urethra to just within the bladder. The incision into the urethra is then closed snugly about the tube. If there has been a successful and complete removal of the prostate, with no unusual trauma, and there is but little bleeding, a large catheter may be passed down the urethra into the bladder and the wound closed about it. As large a catheter as the urethra will admit should be used. In this event the opening into the urethra and soft parts is closed without drainage. Hertzler says "the operator should not become timid at this point and pass a gauze drain down to the incision into the urethra, for this will most certainly cause failure of union."

Some factors which are ever present in all these cases, although to a varying degree, are infection and the individual resistance; another being the condition of

the bladder wall. These factors of course have a very important bearing on the selection of the various methods of cystostomy. Where the residual quantity of urine is large one will naturally find a high degree of infection, and often an embarrassing degree of atony of the bladder wall. Under such conditions immediate closure of the bladder increases the hazard.

Fortunately these cases can be very materially benefited by preliminary treatment, and although this requires much time and patience, it means more to the post-operative comfort and the outcome for these cases. It is surprising how readily a residual urine will clear after frequent daily bladder washings of boric acid and the use of a retained urethral catheter. The administration of hexamethylenamine or methyl blue is of great assistance in preparing the patient for the operative ordeal. This treatment continued for one or two weeks will reduce the degree of infection very materially, and will also do much to restore the normal tone of the bladder wall. When this has been accomplished almost any method of immediate bladder closure will probably give equally good results, providing ample urethral drainage is afforded.

Some objection is at times raised to the retention of the catheter in the urethra, but the writer has frequently continued this form of bladder drainage for ten days to two weeks with no unfavorable results. It is true, however, where a catheter is left in position within the urethra and bladder, in the presence of a severe chronic infection, that concretions are likely to form about the eye and tip of the catheter, unless the bladder is frequently irrigated and the catheter daily removed and cleansed. If this practice is followed there is little or no danger of these concretions forming.

When the conditions found at operation are such that one decides to leave the incision open for drainage, and the incision

is suprapubic, a method of urinary control may be employed which I have found to be exceedingly satisfactory. The idea is not new, but its present application and development I believe due to Dr. Leonard Freeman and Dr. Chas. D. McKenzie of St. Joseph's Hospital, Denver. I have asked Dr. McKenzie to describe the dressing, which he has kindly done for me at this time.

"The rubber dam method of protection (or collection of drainage), following either the suprapubic prostatectomies or gall-bladder operations, has been very successfully used in St. Joseph's hospital for the past year.

"The method consists first in having the patient's abdomen shaved, thoroughly scrubbed with soap and water, washed with alcohol and then with ether. Then several coats of rubber cement are applied for about two inches around the incision, allowing time for each coat to dry.

"Second: the preparation of the rubber dam. Take a piece of medium weight rub-

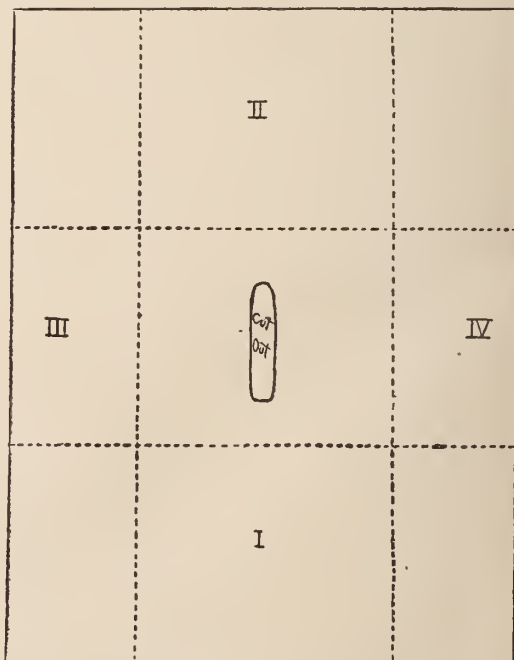


Fig. 1.

ber dam twenty by twenty-four inches, thoroughly cleanse with chloroform over an area corresponding to that on the abdomen over which the cement has been applied. Apply the cement to the dam and allow to dry until very sticky, in fact quite dry. Then putting the dam slightly upon the stretch, place it on the abdomen where it will adhere very firmly. Now trim out from the center of the dam with a pair of curved scissors the area which covers the site of the incision (Fig. 1) and in case some of the area has not adhered, the edge is again touched up with the cement.

"When all is dry, lay several pieces of gauze and a piece of absorbent cotton over the incision. The dam is then folded like an envelope, after which a piece of adhesive plaster two inches wide is carried from the flank of one side, over the dam and fastened to the flank of the opposite side (Fig. 2). This adhesive strap is later cut in the middle and laid back when the dressings in the folded pocket become saturated. New absorbent material is placed on

the rubber container and the dam refolded and the ends of the adhesive strap are approximated and fastened with a safety pin as with the usual dressings. In case the patient is sitting upright or ambulating, a three-tailed bandage will be of considerable advantage in keeping the dressings snugly in place.

"The cement used is the ordinary rubber cement made with BENZINE—NOT CHLOROFORM. I have found the latter to blister the skin, and this not only opens up a new area for infection, but also prevents the reapplication of the dam."

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SOME EXPERIMENTS UPON ANIMALS TO DETERMINE THE INFLUENCE OF URETERAL OBSTRUCTION UPON KIDNEY INFECTIONS, WITH DESCRIPTION OF AUTHOR'S METHOD OF NEPHROPEXY.*

O. S. FOWLER, M.D., DENVER.

I wish to open my paper with a few questions which I believe to be extremely pertinent in reference to certain kidney lesions: Why is it that the vast majority of cases of pyelitis and pyelonephritis are unilateral? Why is it that probably more than 90 per cent of all cases of tuberculosis are unilateral in their beginning? Why is it that we have a distinctly unilateral nephritis, as has been proven by Edebohls, Box, Newman and many other observers? Why is it that most cases of kidney stone are unilateral? and if kidney stones are due to diet, kind and character of fluid intake, gouty diathesis, nation-

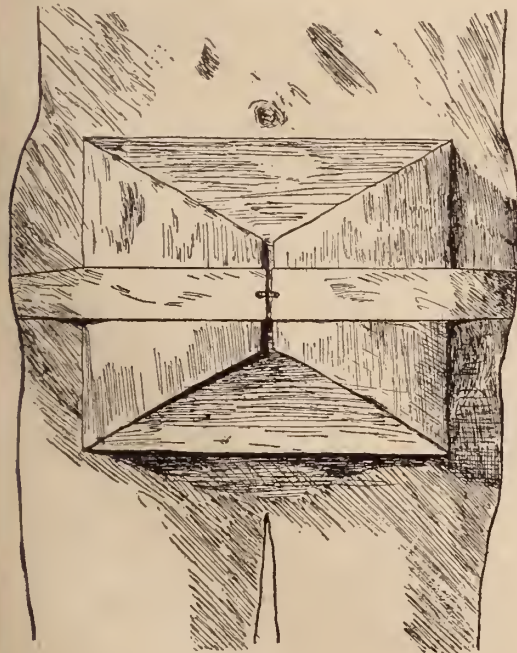


Fig. 2.

*Read at the Annual Meeting of the Colorado State Medical Society, Oct. 7, 8, 9, 1913.

ality, geographical location, concentration of urine, etc., there must be a reason why 98 per cent of all kidney stones are either in the lower pole or else in the kidney pelvis; then why is it that stones are not deposited in both kidneys at the same time, since both are handling the same blood stream? Must it not be that the reason for these various phenomena can be only that there is some local unilateral condition or conditions to produce unilateral lesions?

Why is it that infections of hematogenous origin so often find a foothold in only one kidney, and when once established, why is it that they are so difficult to eradicate, perhaps never clearing up even with the most persistent use of vaccines, restricted diet, urinary antiseptics, large amounts of fluids, etc.? Must it not be that there is here again some local condition that makes some especially favorable soil for these infections to thrive upon?

Two years ago I described before this society an original method of renal radiography to demonstrate ureteral obstruction in "The Early Stages of Intermittent Hydronephrosis" by taking a radiograph of the patient in the prone position and then standing him upon his feet, and after dislodging the loose kidney, taking another in the upright position, by this method showing the amount of kidney prolapse, and its rotation with the course of the ureter in its upper part. Since that time I have called further attention to the fact that a kidney may be far prolapsed, but if the ureter has no fixed point within the radius of the kidney's excursion that it will contract sufficiently longitudinally to take up the slack caused by the dropping of the kidney, and that it will then either assume a nearly straight course or will assume gentle curves which cannot in any manner obstruct the free passage of the urine; this is from the standpoint of the mechanics of drainage, and such a kid-

ney does not require any operative interference. I have further called attention to another sort of kidney and ureter—one in which there may be a kink or an apparent kink in the ureter where the kidney is well prolapsed. This kidney may not be giving symptoms and does not require operative interference, except it is done from choice, to escape possible difficulty in the future, for it surely cannot be regarded as a normal kidney.

Eight months ago while examining a number of plates showing renal stone or plates of cases where there was a definite history of having passed a stone which had been recovered, ten cases to date, I was surprised to notice that each case showed an obstruction in the ureter, and, too, the examination of the catheterized urine from these kidneys all showed pus in lesser or greater quantity. Upon further study of our plates, Doctor Stover and I were able to demonstrate obstruction; that all cases of pyelitis save one—twenty-two in all—showed undoubted urinary stasis from ureteral obstruction. The same thing was also found true of renal tuberculosis—four cases. In only seventeen cases have we found straight intermittent hydronephroses without any infection. This suggested to me that perhaps urinary stasis had an important bearing upon the causation of kidney stone, and I prepared a paper from those data and presented it to the American Urological Association last April; also to the Genito-urinary Department of the American Medical Association last June. In these papers I also described a new method of nephropexy which I will present to you today.

In considering further the manifestations of these various kidney difficulties, I decided to study experimentally the influence of urinary stasis upon the production and maintenance of kidney infections similar to those reported by Albarran on

rabbits, selecting dogs for that purpose, and have used mostly bull terrier bitches, this breed being both plentiful and hardy. I used bitches altogether, as I thought it would be possible to catheterize their ureters and obtain the required data without having to kill them. This is perhaps the first time that dogs have ever been catheterized through cystoscope, the bladder being first opened heretofore. My first plan was to produce a partial obstruction in one ureter and inject live bacilli above the obstruction into the renal pelvis, and then at a later date to catheterize the other ureter and inject a like number of bacilli into that renal pelvis, hoping at later dates to collect the urine separately for comparison. I was compelled, however, to select a new series of dogs for the second, or control, part of the experiment, inasmuch as the first procedure was fatal to seven of the ten dogs within a period of three weeks, this giving not quite so valuable a control as if the two kidneys of the same dog could be compared. Another serious difficulty was that it was impossible, even with the utmost care, to inject the bacilli into the renal pelvis without infecting the operative field, which caused us very great inconvenience and perhaps the lives of some of the animals by requiring them to care for an infected wound which we had in all, except two; in one other I succeeded in passing the catheter to the kidney just previous to the operation, through which I injected the bacilli above the obstruction.

After proving that dog's urine would not kill colon bacilli in dilute solution, having secured a positive culture after the urine stood forty-eight hours, we selected this germ, and we certainly found it more than sufficiently pathogenic for our purposes. In order to be reasonably accurate in the amount and virility of the bacilli used in the different animals, we decided upon a twenty-four-hours' growth

and to use one one-hundredth of the part held in a platinum loop about 3 mm. in diameter. Several bacteriologists estimated that this would represent at least a few hundred million bacilli. In the cases catheterized we used more than one-hundredth of this solution, so as to be sure that we had filled the renal pelvis with the suspension. In some cases where the catheter could not be inserted clear to the kidney we would inject rapidly as much as 5 ccs., thus making five times as many bacilli for the dog to handle, and thus if any error occurred it would be on the side of the control.

We learned some very interesting facts about the anatomy of the genito-urinary apparatus of dogs: The dog's left kidney is about three-quarters of an inch lower than the right; the ureter follows the same general course as in the human, but is more closely attached to the peritoneum; however, when it is dissected loose it is very slack. The lower part of the ureter is where we met practically all our difficulty in catheterizing; a dog's bladder lies very far anteriorly and ventrally, its fundus reaching to about the umbilicus; the urethra is deeply situated in the mouth of the vagina, and often very difficult to find. From this point it is very much elongated, making the mouths of the ureters vary from 5 to 7 inches from the vulva. The mouth of the ureter appears not very unlike that of the human, being more oval. The ureter passes through the bladder wall, as in the human, obliquely, only for a greater distance, but immediately above the bladder wall is where trouble begins when you attempt to insert a catheter, for owing to the high anterior position of the bladder, the catheter must make a sharp turn back toward the operator, and then follow a small semicircle before it ascends upwards or anteriorly out of the bony pelvis. But once past the sharp angle immediately above the blad-

der wall, there is usually little trouble the rest of the way. We found that an average-sized bull terrier bitch, under an anaesthetic, could accommodate the 24 French size cystoscope. Much difficulty was experienced with catheters; they seldom took the curve just above the bladder without trouble, and we found that the various types of catheters for the human were all more or less unsatisfactory, and a good one is yet to be devised. I am having my ideas upon this subject put into one that I hope will be suitable. The anaesthetic used on the operative series was ether straight or preceded with morphine; on the control series, larger doses of morphine were used, sometimes being followed with a small amount of ether. Our batting average on inserting the catheter was above 50%, being successful sixteen times in thirty chances. At one time we had had so many failures that I felt that we must give up the cystoscope and do a transperitoneal cystotomy and insert the catheter directly through the bladder opening, but later several successes were sufficient to prompt us to carry it out along these lines if it took all summer, which it did, all right. Many times we worked two hours or more, only to fail, and go home disgusted, wondering what kind of a man could hit the bull's-eye a thousand per cent. We found, too, that dogs apparently had bladder inflammations, for in several instances the mucous membrane was so red and congested that we failed to even see the ureters.

The kidney was exposed by the usual kidney incision, and the ureter dissected free from the peritoneum for about six inches below the kidney. The partial obstruction was produced by raising up two strips of the psoas muscle, each about the size of a fountain pen. The inner one was free at its upper end, and the outer one free at its lower end. These loops were then carried across the ureter from oppo-

site directions and sewed into place with linen, care being taken that the ureter was not drawn tightly in the assumption of its new course, somewhat in the shape of a flattened "S." By this method we feel that we succeeded in not producing complete obstruction, which would give very different results in these experiments. The bacilli were next injected into the renal pelvis, the syringe needle being covered with gauze soaked in iodine. The region was swabbed with iodine, the kidney stitched into place by its fibrous capsule and the wound closed with linen for ligating and suturing. We usually placed a drainage tube, but we had only two heal by primary union.

Our results were as follows: Seven of the ten animals in which partial obstruction was produced died. No. 10, two and one-half days; No. 5, six days; No. 8, nine days; No. 7, thirteen days; No. 9, fifteen days; No. 3, sixteen days; No. 4, eighteen days; Nos. 1, 2 and 6 survived the procedure with some difficulty and later put on much weight. No. 1 developed some eye infection, and at the eighth week also developed a partial paralysis of the hind parts and was then disposed of and posted. Nos. 2 and 6 are still alive and apparently perfectly well. No. 10 had no pyelonephritic abscess, having been injected through the ureter, but she was the earliest one to die—sixty hours—apparently from the shock and sepsis, as the kidney was filled with purulent urine. Neither No. 7 nor No. 9 had a pyelonephritic abscess, but in all of these seven the kidney was distinctly filled with purulent urine (in all we could press out this urine below the partial obstruction), and four of them had more or less severe pyelonephritic abscesses. No. 1, which developed the paralysis in the eighth week showed that the ureter was patent and the culture showed no infection present. This was the one which was the only exception in

the age of the culture injected, we having used here 1/50 loop of an old growth of colon bacilli. This one fact may negative its value. All of this series lost weight after their operation and seemed quite ill, with a few exceptions. We did not consider it necessary to make cultures from these early-death cases, as the lesions were so evident that there could be no cause for doubt. Animal No. 9 had 1/100 of a loop of 24-hour culture injected into the renal artery, and died six days later with the kidney filled with markedly purulent urine and the parenchyma of the kidney showed multiple foci of infection in very much softened areas, but none of them entirely broken down.

As stated above, the control series gave us so much difficulty that we have not a full report upon the ten kidneys. In fact, we injected two other dogs, but one escaped and the other was not posted until too late—twenty-two hours—which we considered too long to be of value in these experiments; all others were posted within one-half hour, and cultures made within another hour upon glycerine agar slants, and then incubated for forty-eight hours.

Animal No. 11, fox terrier bitch, left ureter catheterized August 20, and injected with 1 and 1/2 hundredths of a loop of twenty-four-hour culture, failed to catheterize the right ureter. No apparent shock from the procedure; whelped a litter of puppies September 10; puppies not allowed to nurse mother; posted on September 22, and two cultures made from left kidney; also made two from the right, to determine whether any infections had reached here either by the blood stream or by ascending the ureter; all tubes were without growth at the end of forty-eight hours. This dog was very fat, and her pregnancy was not recognized. It is interesting to compare this with what very likely would have happened had all these

things occurred to a pregnant woman. We do not believe the human kidney would have given a negative culture.

No. 13, white bull terrier bitch, catheterized both ureters August 22, and injected 1 1-2 hundredths into each catheter which was clear to the kidney; no shock or apparent indisposition followed; gained in weight and developed a very bad fighting spirit; posted October 2; two tubes from each kidney; all tubes without growth at the end of forty-eight hours.

Animal No. 14, discarded on account of late posting.

Animal No. 16, had both ureters catheterized September 24, and injected with 2 cc. into each kidney; was posted eight days later to see how soon a dog might take care of a few hundred million colon bacilli; two tubes from each kidney; both tubes from the right kidney showed less than a dozen separate and distinct colonies, and one tube from the left kidney showed one lone colony at the end of forty-eight hours. This is a very interesting observation and shows that an infection by large numbers of bacteria can be readily disposed of. I will make other observations later at the end of two and three weeks.

Animal No. 15 had the left ureter catheterized and injected, but escaped from the boarding kennels.

Animals Nos. 17, 18 and 19 have all been injected into each kidney with two one-hundredths of a loop of twenty-four-hour growth; these have been treated too late for this report, but will be reported later. None of these kidneys upon median division showed an evidence of destruction.

We yet have two of the animals in which partial obstruction was produced. With these we expect to determine whether there is yet infection in that kidney, and if so to operate again to relieve the kink, and then study them to

see whether the infection will clear up, and how soon. A number of other animals were worked with, but in these we failed to catheterize either ureter, so we have not included them in any report.

In concluding this report, I would say that so far the results seem to point definitely that it is necessary to have more or less obstruction in the ureter for the colon bacilli to obtain a foothold in the dog's kidney, and we further believe that we are justified in reasoning that the same conditions are necessary in the human kidney, yet I trust that I will be able to offer further evidence in the future upon the subject. I wish to express deep appreciation for the extremely valuable aid by Messrs. Ashley, Campbell, Teplitzky and House, and more especially to Mr. Clyde Knuekey and Henry Cooper, all students of the University of Colorado Medical School; also to Drs. A. J. Argall, Roscoe Baker and J. W. Davis, without whose assistance it would have been impossible for me to carry on this work, which has been expensive as well as time-consuming, requiring nearly a thousand miles of driving by auto, as thirteen trips to Boulder were necessary, we leaving Denver at about 4:30 or 5 a. m., and returning in time for office hours in the afternoon. I am further indebted to the Doctors Harlow Burnett and Todd, for the use of the school's laboratories, and kindly assistance.

Now, as to my method of nephropexy: The idea of it is that I am simply applying the well-recognized principles of draining of infected areas, for you all know that that principle is so well established that it needs no argument for justification; that is what you do with an abscess wherever found, and my rotation of the kidney to an oblique position is just what is accomplished, because an infected kidney must be considered an abscess. It is rotated to such a distance that

the lower calyx has a downhill, or gravity, drainage when the patient is upon his feet, which is an aid to the musculature of the urinary tract. This makes a permanent fixation in this position by taking two strips of fascia lata from the thigh, each one-half inch wide and ten or eleven inches long, depending upon the size of the kidney and the thickness of the muscles of the back.

The wound in the fascia lata is closed unless enough fascia for both kidneys has been removed when it is left open. The risk of producing a hernia of the muscles has been proven to be unimportant, since large pieces of fascia have been removed for various purposes without damage. The strips of fascia soon become fixed and make it impossible for the kidney to get away and prolapse again, as these strips are as strong as rawhide, which they very much resemble, and when done this way you can assure your patient that the kidney will certainly stay up. I have the assistant remove the fascia while I am getting the kidney or kidneys out and ready for the fascial strips. The patient is put in the kidney position at the start, and the fascia is removed from the outer and anterior aspect of the thigh, while I expose and prepare the kidney or kidneys. The two wounds are then closed simultaneously, and the time of the operation has not been lengthened by the fascial part, though it would be if you did not entrust the removal of the fascia to an assistant. You may ask why another wound and all this apparent trouble. The reasons are evident, and they are that a relatively large number of patients are either not cured or not relieved by the old methods of nephropexy; in fact, they have been unsuccessful in so large a percentage of cases that many doctors will advise patients not to have a kidney anchored, because they say it will come right down again. Now, that is what many

family physicians think of these usual methods, and they are the ones who have taken the care of these unsuccessful cases. If any of you feel that you do not need a more stable and reliable method of nephropexy, then follow the after history of any man's cases or those of any number of men, for no one surgeon's results are appreciably better than the others—every one of us has seen perhaps several cases of relapse. I have now done this operation seventeen times and have not found it difficult or tedious, and if you will study the technique or add to it, and fix it in your own mind, you will be delighted with it, both as to the immediate operation and to the after results. I have used it now for just a year this month and have changed my technique but little. The fascial strips are woven in and out through the capsule of the kidney, bringing the ends out near the inner border of the upper pole and near the upper border of the lower pole, so as to give the proper directions of traction to produce the desired direction of rotation. Plunge a blunt hemostat through the muscles and draw the fascial strips through and sew them with chromic gut to the fascia of the back. You can do all this before the wound is closed and can determine exactly where the kidney is placed and just how much it is rotated. Close up the wound in the usual way. The convalescence period is materially shortened, for the patient can be allowed to get out of bed earlier and begin heavy work also earlier.

Dr. Henschen of Germany reported one case last March in which he used a large sheet of fascia, seven by eight inches and covered the entire kidney, and sewed its edges to the edges of the wound. Kocher later modified this method by using a piece of fascia only half as large, around lower pole, but neither of them rotated the kidney, which really is the new and important principle introduced into kid-

ney surgery, and one we believe will revolutionize kidney surgery, for by it I am sure we will be able to save kidneys that otherwise would have to be taken out. It will prevent the recurrence of kidney stones, for by it you are removing the condition that caused the stone. It is indicated in all cases of kidney infections, and I use it in all cases of intermittent hydronephrosis.

DISCUSSION.

Thomas L. Howard, Denver: I would like to ask Doctor Fowler if, when he tied off the ureter, he ever ascertained whether urine flowed into the bladder again? If his tie was sufficient to completely occlude the ureter, naturally his infection of the kidney pelvis was much easier, for we see this condition in the urinary bladder every day with patients suffering from enlarged prostates.

Doctor Fowler says he places the kidney in such a position that it will drain, but does this kidney drain when the patient is lying in bed. If he has corrected a bad position of the kidney for the standing he hasn't for the reclining posture.

Oliver Lyons, Denver: A few years ago if one wanted to cause a discord among a gathering of peaceable genito-urinary surgeons, all that was necessary was to start a discussion on paths by which bacteria reach the kidney. It has been recognized years ago that the presence of bacteria alone in the urinary tract is not sufficient to cause inflammation. It was proven by Albarran thirty years ago that the injection of virulent micro-organisms into the ureter and pelvis of the kidney would not cause an inflammation in the absence of predisposing factors such as injury and gross obstruction.

Tubercle bacilli are frequently present in the urine of consumptive patients, being passed through the kidney without causing tuberculous disease of these organs. We have also the well-known bacilluria in typhoid fever.

For practical purposes, then, it may be accepted that pathological organisms can pass through the kidney without causing any appreciable clinical lesion, even though a minute histological examination would show some slight damage to the kidney during their passage that could only be demonstrated by the microscope.

Various experiments have injected pathogenic organisms into the veins of animals and in the healthy control animals no inflammation arose in the kidneys, but if the kidney was previously injured by a blow on the loin or by obstructing the ureter, or by feeding the animal on drugs that would irritate the kidney, such as turpentine, cantharides, etc., inflammation would almost invariably occur, accompanied by multiple cortical abscess. The use of the cystoscope and ureteral catheter point

more and more to the conclusions that most cases of kidney infection are hematogenous in origin, and in early cases they are unilateral. Ascending infections undoubtedly occur, but the idea that they are common is due to faulty methods of diagnosis in cases seen late in their course, and many times only one kidney is affected anatomically, although both kidneys may appear to be affected physiologically.

The experiments of Walker prove that the organisms may travel upward from the bladder through the lymphatics. Nevertheless, suppuration may sometimes be set up in apparently normal kidneys by bacteria in a state of exalted virulence or by attacking the kidney in excessive numbers.

The important part the nervous system plays in renal infections merits mentioning. Clinical experience affirms that in highly nervous persons the mere passage of a clean instrument through a clear urethra may give rise within a few hours to all the symptoms of inflammation of the kidney. Death has followed such instrumentation, and autopsy revealed nothing but engorged, ecchymotic, edematous kidneys, so that these slighter reactions may be sufficient to predispose kidneys to inflammation if the necessary organism was circulating in the blood at the time.

Just a word as to this new nephropexy: We already have a number of the only correct methods of haltering up a loose kidney. Comment is unnecessary as to the ultimate results. I hope in this method we have all that is claimed for it by the author, and that will be sufficient. But it looks to me the most faulty of all methods recommended, for it seems to me the nerves of the pedicle will be dragged in such a way as to give rise to a vasomotor and secretory crisis and a possibility of obstructing the veins sufficiently to cause congestion and hematuria, thereby aggravating the symptoms already present.

I would like to ask Doctor Fowler if he has ever examined one of these patients, say a year after he has performed this operation, to determine whether or not the kidney remained in this position. I do not believe it will, and if it did, the theory that the kidney would drain better, and therefore be less liable to stone formation, does not agree with the facts. The contention is made by the author, I believe, that in animals the kidney is found in this position, thereby affording a perfect drainage which will antagonize stone formation in the kidney. Opposed to this theory is the fact that stone in the kidney of sheep has been reported by a number of observers, and I have found a stone in the kidney of an ox.

W. M. Spitzer, Denver: The method described by the Doctor for fixing a kidney was used and given up years ago. As one of the gentlemen discussing this paper says, every new method of fixing a kidney is the only one for a while, and then some other method is adopted. To its own author each of these methods is surely superior to everything previously described. The living suture was probably first used by Vulliet for the purpose of securing a kidney in a fixed position, and you will find it described

in the *Revue medicale* of the year 1903. His operation as regards the use of the living suture is far superior to the one just described.

It is as follows: After making the usual kidney incision the kidney is freed and brought out on the back and then replaced, and a second incision made beginning about one inch from the transverse process of the second lumbar vertebra, running up to the transverse process of the eighth dorsal and parallel to the spine. The finger is now inserted under that tendon of the *longissimus dorsi* which arises from the transverse process of the first lumbar, and it is stripped to the uppermost portion of the wound. This gives one a living suture, which is many times thicker and stronger than the piece of fascia lata advocated by the Doctor, with the additional advantages of having one end not removed from its original blood supply, and both wounds in the back close to one another, and the advantage of speed, for it took Vulliet but two or three minutes for this portion of his operation. He left the end attached at the first lumbar vertebra and cut the tendon about opposite the transverse process of the eighth dorsal, and using a hemostat he pushed this loose end through the muscles of the back just as described above, and threaded it through the proper capsule of the kidney, in and out, and sewed it to the muscles and fascia of the back in the wound made for the kidney incision. He did not, however, tip the kidney up, as described by Doctor Fowler.

It was given up, however, because it was found that no matter how one sews a kidney into place, or with what, it remains there only because of adhesions formed between the kidney and the muscles of the back; and because it was found that these living sutures disappeared after a few months. I know this to be true from my personal experience. I operated on one of the cases on which Doctor Fowler performed this operation, eighty-nine days after he did. I purposely made the incision not at the site of his former incision, although it was most convenient for me to have made it at that place, but one-half inch away, and sought this living suture, but could not find a trace of it. The kidney was fixed, to be sure, but it was fixed by adhesions, due to the tuberculosis of the kidney, which the Doctor overlooked, and which was the man's real trouble; and furthermore, it was not tipped up as the Doctor tipped it, but had resumed its former position, with the axes as they should be normally. The renal artery and vein were covered with tubercles at the time I performed this nephrectomy, and although the man recovered from his operation, he died four months later on Doctor Pershing's service at the County Hospital in Denver, from tuberculous meningitis. I believe this answers Doctor Lyons' question.

Now, as to the experimental work on dogs: The Doctor tried the ureter and managed to infect that kidney, and found further that when the ureter was not tied he did not infect the kidney. Why? Because the vitality of that kidney was lowered by tying its ureter. That answers Doctor Fowler's first question as to

why stone occurs unilaterally so frequently. Does renal tuberculosis occur unilaterally because there is obstruction in the ureter? Certainly not. The obstruction in the ureter which we find so frequently with renal tuberculosis comes after the kidney is infected with tubercle bacilli. And why is this kidney subject to tuberculosis and not the other one? Because it has a lower resistance than its fellow. This has been proved by animal experimentation by Brewer, to which we will refer later. This work has all been gone over many times by many observers, and I have heard this morning nothing new, and nothing which has not been proven repeatedly before. To begin with, Albarran, in a series of experiments performed twenty-four years ago on dogs, the exact counterpart of the series of experiments reported today by Doctor Fowler, and in which attempts were made to infect a kidney with living bacilli, found that infection did not take place in those dogs in which he did not tie the ureter. But in another large series of experiments he succeeded in infecting a kidney eight times out of ten, and found post-mortem abscess of the kidney, when the ureters were tied. He attempted to prove ascending infection in still another series of dogs by injecting living bacilli into the bladder, but was unsuccessful. He was followed by Guyon, who, in fact, did this work at practically the same time and the work was of exactly the same sort, and he confirmed Albarran's findings.

Goldschmidt and Lewin in Germany, two or three years later, did the same work on rabbits, but claimed that they managed to succeed in infecting a kidney from bacilli injected into the bladder. Stewart of Philadelphia, working again on dogs, had variable results as to success in infecting a kidney, and thought that he managed to produce perinephritic abscess by way of the lymph route from the bladder to the kidney. But best of all, and in proof of what I say, that the infection of the kidney is due to its lowered resistance, was the work of Brewer, which he reported in the surgical section of the American Medical Association meeting at Los Angeles in 1911. He demonstrated that it was not necessary to tie the ureter to obtain infection. By injecting colon bacilli into a vein of a dog's ear, and striking the dog a sharp blow in the loin, i. e., reducing the vitality of the kidney, he obtained abscess of the injured kidney.

Now, if you twist a kidney into the position advocated in the other part of this paper, you will produce congestion, and thus lower the vitality of the kidney. You will then make it subject to infection, and no doubt if this operation be carried out extensively it will result in the end in pus kidneys, tuberculous kidneys and hydronephrotic kidneys.

Doctor Fowler is, I think, to be commended for his experimental work, and one must remember that it is always a sacrifice to do this work. But he might have saved himself a lot of trouble by reading the literature on the subject, for he has proven nothing new, as this work has been done before, and I do not think that any more work in this line was necessary

to verify the work which had already been done.

Lastly, as to his theory of the formation of stone (for it is purely theory, unbacked by any facts) I am convinced that stone does not form because of lack of drainage of the kidney. In proof whereof I call your attention to the following facts: We often find hydronephrosis which has persisted for years, and no stone has formed. Again we find stone in a kidney pelvis in which hydronephrosis has not yet occurred. Furthermore, if the stone in the kidney pelvis be removed in those cases in which hydronephrosis has occurred, the hydronephrosis will clear up. I have here a sheep's kidney which I will pass around, with a stone in the pelvis. You will see that there is no hydronephrosis here. According to the theory given you in this paper, stone should not form in the kidney of a sheep because, again according to the theory, it is in the position in which the Doctor attempts to place the human kidney, so that it may drain perfectly, and with perfect drainage the claim is made that a stone could not form. Stone is of much more common occurrence in the kidney of sheep than in the kidney of man. The explanation for stone will have to be given you by someone who knows more about it than I do, probably by some biologic chemist. Much has been written on it.

C. E. Tennant, Denver: I did not wish to enter into this discussion between the G.-U. men, not confining my work to this particular specialty. But I am interested in the subject from the practical, the physiological and the pathological side, and these facts have been suggested to me during the discussion.

We recognize, and I think it is generally conceded, that we have infections in almost any cavity when we have poor drainage from it. With poor drainage, or stasis, infection occurs within a very short time, and to restore good drainage by some method is to relieve the infection. I think this fact also holds true with the kidneys.

A fact occurs to me at this time with relation to this discussion of drainage from the kidney. All of our hollow viscera in the body that are available as reservoirs do not have their openings from the lowest point. If the openings were at the lowest point the nervous tension necessary to keep the sphincteric outlets closed sufficiently to retain the contents of these reservoirs would be enormous. You will remember that we find the outlets raised above the lowest point. Take, for example, the stomach and its pyloric outlet under normal conditions; or the gall bladder as an example, and the urinary bladder. Now, is it necessary to turn the kidney on its side to get good drainage? Is there not some fine balance? It is not alone gravity that encourages drainage. There is some other factor that we do not, perhaps, understand. We must concede wherever there is infection that we do have stasis, but after doing away with the obstruction is it necessary to place the outlet at the lowest point of this reservoir? I think not.

SOME FACTS ABOUT THE NORMAL KIDNEY AND URETER, SHOWN BY MEANS OF THE RADIOGRAPH.*

A Study for the Purpose of Differentiating Normal From Pathologic Conditions.

BY WM. M. SPITZER, M.D.,
DENVER, COLO.

The work covered by this paper was done in collaboration with Dr. S. B. Childs, and the conclusions are both his and mine. The plural pronoun is therefore used throughout.

Some four months ago we read a paper on this subject before the Genito-Urinary section of the American Medical Association. Since that time we have completed our work by adding eight more normal kidneys to the twenty we then reported.

Urology is advancing rapidly. Pyelography, born in 1907, the child of the fertile brain of a German urologist, has become a great aid in the diagnosis of surgical lesions of the kidney. This science consists in depicting the kidney pelvis, filled with a substance which affords obstruction to the passage of X-rays, on a radiographic plate, and has added to the armamentarium of the urologist.

The substance most used is collargol, a colloidal silver. A word with regard to the nature of this preparation would not be amiss here. Silver is broken up into a colloid form by the electric arc. It then possesses properties that it had not before, such as its ability to go into permanent, stable suspension (not solution) in water. How much the water will take up, I do not know, but I am certain that 20% by weight will stay in permanent suspension.

Now, as to the object of this paper. When a kidney pelvis and ureter are filled with collargol, it is for the purpose of finding out how much the picture of it varies

from the normal as to its shape, size, position, and the shape, size and position of its calices, and how (in what manner) it deviates from the normal. We should expect a hydronephrotic kidney to have a certain shape (on the X-ray plate) not possessed by the normal kidney. An abscess of the kidney, communicating with the pelvis, or with one of the calices, would present a different variation from the normal, and so on, with other surgical conditions affecting the kidney, or kidney pelvis, presenting shadows that would be pathognomonic of the condition; but to recognize a deviation from the normal, one must know the normal.

A thorough search of the literature disclosed the fact that the normal had never been consistently studied, and the results published. The literature does, however, show that conclusions have been arrived at as to what is pathologic (deviation from the normal) without regard to what the normal might have shown had it been demonstrated. As is to be expected under such conditions, the conclusions so drawn are frequently erroneous, and, whether erroneous or not, are not to be trusted.

The object of this work is, then, to establish the various types of normal, so that any departure therefrom may be easily detected, and so that the proper diagnostic value may be attributed to it.

The object of this particular paper, after having read a similar paper four months ago, is to demonstrate still further, by additional work along the same lines, that the conclusions drawn from the previous work are both accurate and justifiable.

To begin with, we made sure that our cases were normal, as follows: The history of a prospective subject was carefully gone into as to any possible lesion of the urinary tract. If it disclosed any present or past lesion, the subject was refused; otherwise the urine was examined, chemically and microscopically, and if found

*Read at the Annual Meeting of the Colorado State Medical Society, Oct. 7, 8, 9, 1913.

normal, the case was tentatively accepted. The patient was then cystoscoped, and the bladder having been found normal, radiographic catheters were passed into the ureters until they came to a halt. When, by means of the cystoscope, evidence was found of a pathologic condition in the bladder, or of a pathologic condition above, because of an abnormal appearance of the ureter mouths, the case was thrown out of the series; otherwise the pelvis were now filled with collargol.

From this point on, we varied our technique, depending on whether we wished to show where the radiographic catheter went, and the normal ureter length, or whether we wished to show the shape and course of the ureter. In the first instance, we left the catheter in situ, and in the second instance, we withdrew the catheter 10 to 20 centimetres.

Stereoscopic plates were now made with the patient flat on his or her back (exactly half the cases were males and the other half females) at the end of a full inspiration. The patient was then asked to stand on his feet, cough violently, raise his heels from the ground and come down forcibly, and then a single plate was made, with the patient in an upright position, again at the end of a full inspiration. The cystoscope and catheters were now withdrawn.

The results of our work are that we determined (a) the normal mobility of the kidney over and above the respiratory movement of that organ, (b) the ureteral length, (c) the capacity of the pelvis, with its variations, (d) the shape of the pelvis, (e) the direction of the pelvis, (f) the types of pelvis, (g) the consistent lack of a given shape and course of the ureter, (h) the course of catheter and position of same in pelvis, and (i) the number and normal shapes and positions of the calices; and drew some conclusions which end this paper.

Having made all these plates at the end of a full inspiration, it is apparent that the difference in position of the kidney taken in the recumbent and standing positions is the normal mobility of the kidney over and above that produced by respiration. We have demonstrated that this normal mobility in our 28 kidneys varies considerably, some kidneys not changing their position at all and some being 3.5 cm. lower in the standing position.

Mr. E. Hurry Fenwick, of London, whom we followed in this idea of changing the position of the patient to determine the mobility of the kidney, has also done some work along the line of determining the extent to which the kidney moves with respiration.

To be sure, this matter of mobility is of interest, but it has no value other than a scientific one, and there is no use in taking a picture of a patient in the standing position except for this purpose. If it can be demonstrated that a kidney has a much greater range of mobility than we have shown to be normal, it is still to be left severely alone unless something else ails it. We do not operate for movable kidney any more.

The ureteral length has been determined as follows: Graduated catheters are passed, as previously mentioned, into the ureter, until they come to a halt. We will say, for instance, that a catheter disappears 36 cm. into the ureter. Now, when the plate is dry, the amount of catheter that is intra-pelvic and the amount that is extra pelvic is computed; we will say, in the same instance, that one-sixth of the catheter is intra-pelvic. It is perfectly plain, therefore, that the ureteral length is 30 cm. This is accurate, and is of great importance in differentiating an ectopic from a ptotic kidney. It is the only way in which ectopic kidney can be diagnosed without opening the abdomen.

It has been said that a kidney pelvis may

be normal and still hold 20, 40 or even 60 cubic centimetres; we very much doubt this, and wish to put on record the fact that we have never encountered a normal pelvis which held over 12 cubic centimetres. The average quantity a normal pelvis will hold, according to our experience, is 7.34 cubic centimetres; this includes the quantity that is in the ureter, and means, up to the point of pain from distension.

There are but two types of pelvis, the single and the bifid pelvis, although it is not extremely rare to find two pelves in the same kidney, each with a ureter of its own; these two ureters blend, as a rule, before the bladder is reached (we show such a case in our series; however they may fail to do this, in which event there will be two complete ureters on that side, each entering the bladder by itself. However, the single type of pelvis appears in 83% of these cases, and it is fair to presume that to be about the proper percentage of single pelves.

The shape of the single pelvis is either quadrilateral or pear-shape, its lower border being concave and its upper border convex, and it points toward the spinal column, the axis of its outflow being either horizontal or slanting slightly downward and forward to the uretero-pelvic junction.

The course of the ureter is very variable, and its shape is dependent on both its condition of peristalsis at the particular instant at which the plate was made, and the tonicity of the muscular tissue of the ureter. Before the normal was studied, there were seen to be sharp angulations or kinks in the ureter, with the collargol squeezed out at these points. The assumption that this was pathologic was deduced (incorrectly), and it was so noised abroad. The value of studying the normal before concluding that something we may see on the plate is pathologic, is in this particular instance again demonstrated to be well worth while.

We found decidedly sharp kinks in over 66 2-3 % of the normal ureters which we depicted on the plates, and must necessarily arrive at the conclusion that kinks are not pathologic, but are perfectly normal. To be sure, if a given case had symptoms arising from a kidney, and a kink in that ureter were demonstrated, and it were also demonstrated that the shape of the kidney pelvis showed a deviation from the normal, surgical interference would be warranted. But if a kidney gives symptoms, and the kidney pelvis on the plate shows the same deviation from the normal, that case demands surgical interference whether there be a kink in the ureter or no. It is therefore perfectly clear that a kink in the ureter has nothing to do with the case. Particularly is this so when we show that it is more normal to have a kink than not to have one in the ureter, as our percentage of kinks in perfectly normal cases demonstrates.

The calices have a certain shape which it is hard to describe on paper, but which can easily be seen on the plates, and a certain size in comparison with the size of the kidney pelvis, and the pelvis and calices together occupy a certain amount of space in comparison with the total space occupied by the kidney. This is of importance, as the size of the hollow portion of the kidney in comparison with the size of the solid portion of the kidney, as demonstrated on the plate, has much weight as to the normality of the kidney pelvis. It is therefore important to show the kidney itself on the plate, which can always be done except where gas in the intestine covers the shadow of the kidney.

Conclusions.

1. Pyelography is not only justifiable, but necessary; however, none but the trained urologist should attempt it.
2. Unless the lower border of the pelvis is concave, we consider it pathologic.

3. A pelvic content of over 12 c.cm. is pathologic.

4. Movement of the kidney of from 1 to 3.5 cm. over and above the physiologic (respiratory) movement, is normal.

5. The ureteral catheter, as a rule, enters the upper oblique calix and follows the roof of the kidney pelvis to do so, in a normal case.

6. Angulations, curves and kinks of the ureters are found in normal persons.

7. Stereoscopic plates are not only necessary but imperative to demonstrate intrapelvic and extrapelvic conditions, and the course and kinks of the ureter.

8. Length of ureter can be calculated only from the plate, and is of importance.

9. Pain is caused by rapid distension of the kidney pelvis, rather than by any particular drug or percentage of drug used for this purpose. Pain to a slight degree is unavoidable if one wishes to know that the kidney pelvis is properly filled, but passes off immediately. Shock, being caused by rapid distension, can be avoided easily and completely.

10. As the shape of the ureter is due to its laxity or tensesness, either of which conditions may be normal, and its calibre varies considerable in normal subjects and is still further altered by peristalsis, care should be exercised in drawing conclusions that pathologic conditions exist because of apparent abnormalities of shape and course, or because of curves, kinks and angulations or apparent constrictions.

11. Having found kinks in over 66% of our series of normal ureters, they are normal, and not pathologic.

12. It is useless and unnecessary to put the patient in the standing posture for a radiographic plate of a collargol filled pelvis, as nothing more can be learned from this position than from the recumbent position, except the position of the kidney. This is of no importance without pathologic conditions, which can best be demon-

strated with the patient in the recumbent position. Furthermore, the patient is more comfortable in the recumbent than in the upright position for this work.

DISCUSSION.

Samuel B. Childs, Denver: Some may feel that they have had quite a sufficiency of kidney discussion. In a time of fifteen minutes allotted to Doctor Spitzer and five minutes to me it is hardly to be expected that we can convey to you all the deductions that we have made from nearly a year's work on this subject of normal kidneys.

It required an immense amount of work to get these cases together in the first place, and in the second place, we devoted much time to each individual case. We make a stereoscopic pair of plates with the patient lying on the table, and we make one plate with the patient standing. As Doctor Spitzer has told you, it was with the purpose of establishing as much as any one set of investigations can do—what the normal pelvis, the calices and the ureters should look like.

We have presented these plates to you, and there are many others. We have plates of twenty-eight kidneys which demonstrate the different forms that we have found, and furthermore demonstrate that kinks exist in 66% per cent of our normal cases, and I believe that kinks exist in every normal case. Why? Doctor Spitzer and I have taken these plates at the end of full inspiration and in each case the kidney has had a normal excursion which varies from nothing to 1.5 inches. If the normal kidney has an excursion of 1.5 inches there must be some laxity of the ureter, and the kidney not being fixed and the ureter not being fixed, as the kidney comes down an inch and a half, the ureter is naturally bound to curve and kink. If you want to strain a fine point and make a differential diagnosis between an angulation and a kink, that is splitting hairs.

There are pathologic kinks, of course, but because you have a kink in the ureter you have not necessarily a pathologic kink, and we think to establish a pathologic kink in the ureter we must have a concomitant change in either the calices or pelvis. The pathologic kink, then, is a kink which produces changes in the calices or in the pelvis of the kidney, or both; in other words, an intermittent hydronephrosis.

To operate on cases because we find a kink in the ureter is operating upon a case which probably will not be improved, unless you can demonstrate that it is a pathologic condition, and that there is some condition of intermittent hydronephrosis, accompanied by dilatation of the calices of the pelvis, that you wish to rectify.

Another point of importance is the establishment of the relative position and size of the pelvis and calices to the shadow of the kidney. With our powerful machines at the present

date we are able to do soft-tissue work which three or four years ago was considered impossible, and as I have stated to you, we expect to show the shadow of the kidney in nearly every case. With the shadow of the kidney shown and the pelvis and calices distended with collargol, we can tell pretty accurately whether we have a normal pelvis and normal calices in contrast with the normal shadow of the kidney.

By this means also, knowing the normal, we are able to make a diagnosis of probable pyelitis. We think in some of our cases we are able to make a diagnosis of pyelitis from a peculiar ragged, or at least not clear-cut, appearance of the calices and pelvis. Of course in this case we must assure ourselves that respiration has not taken place, because you get a ragged appearance from respiration.

Tuberculosis and tumors of the kidney pelvis, as well as of the kidney itself, can often be made by the X-ray. Eight years ago I made a diagnosis in a case of this kind referred to me by Doctor Grant. I did not say definitely that there was a tumor in the pelvis. I said that there was a mass which cast a shadow which I did not think was a stone, but which was probably either a pyelitis or a tumor of the kidney pelvis. At operation an adenoma of the kidney pelvis was demonstrated.

As I emphasized in discussing Doctor Howard's paper, by the exclusion of different pathological conditions of the kidney we are able to draw definite conclusions many times in cases of hematuria, than which there are no cases more puzzling to the general practitioner.

Furthermore, I want to call your attention to the fact that several conditions can cause symptoms very closely resembling, if not identical with, those caused by a renal or ureteral calculus. Experience has proved that stones in the kidney or ureter exist in about 12½ to 25 per cent of the cases that are referred to the radiologist for probable stone in the genito-urinary tract.

Wm. M. Spitzer, Denver: Doctor Fowler's congratulations on our removing the catheter and taking the ureter under fluid conditions are a trifle early. We never do that except in this work, and then only in those cases in which we took the trouble to demonstrate that kinks appeared in 66% per cent of normal kidneys and ureters. In about one-half of our cases we left the catheter in the kidney pelvis, and we are pleased that we did, because we are able to demonstrate the course and position of the catheter in a normal case.

Now it is settled that when we can demonstrate hydronephrosis (which we can easily enough) operative interference is indicated if there be no kink in the ureter. Again, if we can demonstrate hydronephrosis, operative interference is indicated if there be a kink in the ureter. It therefore is evident that the kink in the ureter, having been demonstrated to exist normally in the majority of human beings, has nothing to do with the case.

I want to correct an impression that has been given twice this morning, that the urine

must flow down hill; that you must straighten the kidney up so that the last least portion will flow down hill, and that if there be a kink in the ureter you must straighten the kink out so that the urine may flow down hill. The urine flows up hill in every human being, and the Lord has made arrangements for this to occur. From the glomeruli the urine flows down hill from the upper pole of the kidney. But from the lower pole of the kidney it must, of course, flow up hill. Again, in the convoluted tubules it flows up and down hill both, because there is an ascending and a descending portion to each of these tubules. The provision the Lord has made for it to flow up hill is the supply of muscular tissue which abounds in the urinary tract. The ureter is almost entirely muscular tissue, as are the calices majores and the calices minores; and the collecting tubules are well supplied with muscular tissue. This muscular tissue is innervated from the sympathetic nervous system, and everywhere it abounds with ganglia, or small brains. Doctor Hillkowitz has well demonstrated this to me under the microscope. Is this not provision enough?

An idol dies hard. Had I worked hard to demonstrate that if a kink exists in a ureter the person owning this ureter must be operated on, not knowing that the kink belonged there and was perfectly normal, I too would have felt badly when somebody demonstrated that a kink was but a part of the normal scheme.

I wish to repeat that it is important to show the kidney itself on the plate, because the shape and size of the kidney may be compared to the normal, and thus an extremely large kidney, or a tumor of the kidney will be seen. Again, if there be a tumor of the abdomen in the neighborhood of the kidney, and the kidney itself shows clearly on the plate, of normal size, and the tumor be large, we will know that the tumor is not connected with the kidney, as has happened in some of our pathologic cases.

PURE DRUGS AND THE PUBLIC HEALTH.

In the United States alone there are no less than 40,000 drug stores, each of which has in stock from 1,000 to 10,000 separate articles used or offered for use as medicine. It is not surprising therefore that the enforcement of the food and drug laws should be characterized (by Martin I. Wilbert, in Reprint No. 189, from the U. S. Public Health Reports) as hopelessly inadequate, although in 1912 government reporters examined as many as 10,524 samples of twenty-six official articles. The reliance commonly placed in ready-made tablets on the score of exact dosage is fallacious, for such tablets, even under favorable conditions, have been found to vary from 10 to 30 per cent from the dosage claimed for them. The most evident shortcoming in the present-day enforcement of the pure drug laws consists in a general failure to properly place responsibility for the nature, kind and purity of the medicines supplied to the consumer. The tendency of recently enacted laws is to regulate the practice of pharmacy by placing the responsibility squarely on the person dispensing the drug.

News Notes

Honors have fallen thick and fast on Denver men this year. With Doctor Levy as president of the American Laryngological, Rhinological and Otolological Society; Doctor Packard as president of the American Orthopedic Association, and Doctor Sewall as president of the American Climatological Association, and vice president of the Association of American Physicians, the city and state are certainly well represented in the national societies.

At the recent meeting of the American Medical Association in Atlantic City, Colorado was represented by twenty-five members from Denver, three from Colorado Springs, two from Pueblo and one each from Boulder, Cañon City, Rocky Ford, St. Elmo and Trinidad. Papers were read by Dr. Edward Jackson in the Section on Ophthalmology, Drs. G. B. Webb and G. B. Gilbert of Colorado Springs in the Section on Pathology and Physiology, and Dr. W. M. Spitzer of Denver in the Section on Genito-Urinary Diseases.

Doctor Jayne and Doctor McKinnie, delegates from the State Society, were both in attendance. Doctor Jayne was made chairman of the committee of the house of delegates on revision of the constitution and by-laws. Dr. W. W. Grant was present as a member of the Board of Trustees, and Drs. F. P. Gengenbach and G. A. Moleen as secretaries, respectively, of the Sections on Diseases of Children and on Nervous and Mental Diseases. Our former member, Dr. L. W. Ely, as chairman of the Section on Orthopedic Surgery, gave an address on "Orthopedic Surgery; Its Scope and Its Future." Dr. J. R. Arneill was elected vice chairman of the Section on Pharmacology and Therapeutics.

If you have not already sent to Dr. Aubrey Williams, as chairman of the committee on the scientific program, an abstract of your paper for the Boulder meeting of the State Society, do so at once. Remember that this is essential if you are to appear on the program of the meeting. Abstracts must be sent in by the first of August.

While others were traveling east to the Atlantic City meeting, Dr. D. H. Coover was off to California on a visit to his son and the orange groves.

Hideyo Noguchi, who will deliver the address of honor at the State Society meeting at Boulder, has achieved distinction somewhat early in life. He was born in 1876, and graduated in medicine in Japan in 1897.

One of this year's presidents of national societies is a graduate of a Colorado medical college. The men sent out from these colleges have been fully holding their own with representatives of other institutions. At the twenty-fifth annual meeting of the Boston City Hospital Alumni Association on June 20th, Dr. J. N. Hall, as an invited guest, was called upon to speak of the West, to the somewhat premature text of "His day's hot task hath ended in the west." Of course Doctor Hall gave them their money's worth. His most interesting state-

ment to the members, chiefly Harvard men, was culled from the recent State Board Number of the Journal of the A. M. A., in table "D," of which results of the examination of all graduates of all schools before all the state boards of the country are given. Our local school, with sixty-four men examined before eleven different boards, was the only one of the forty-two schools having more than fifty graduates examined, which scored 100 per cent of successful examinations. Doctor Hall stated at the banquet that, although all the buildings and equipment and all the faculty and the money that our school ever had could be put in one-half of one wing of one building at Harvard Medical School, the success mentioned showed that reasonably good results could be obtained even by the smaller schools.

The Sociological Conference lately held at Boulder under the auspices of the University of Colorado was attended by a number of health officers from different parts of the state. Doctor Farrand, the new president of the University, took a leading part, and papers were read (among others) by Dr. O. Lyons of Denver, Dr. A. R. Peebles of Boulder and Dr. R. W. Corwin of Pueblo. At a smoker which concluded the program on July 1st, a new organization, the Colorado Association of City Health Officers, was formed. The medical department of the University of Colorado will be the headquarters of the association, which will issue monthly bulletins as to public-health work.

The Ophthalmic Year Book, for a number of years edited and published by Dr. Edward Jackson as an entirely private enterprise, is now to be supported in part out of the subscriptions to the Knapp Fund, which was established by the Section on Ophthalmology of the American Medical Association to commemorate the late Herman Knapp of New York.

The New York Medical Journal for June 13th contains an unusually interesting essay by Doctor Spivak, secretary of the Jewish Consumptives' Relief Society, on "Post-mortem Examinations Among the Jews." The article is in part a historical sketch and in part a plea to Jewish physicians to use their influence in favor of autopsies. In spite of prejudice, the Jewish Consumptives' Relief Society has obtained a large percentage of autopsies among patients who have died at the Edgewater Sanatorium.

Last spring a special fund of \$2,500 was collected among members of the Denver County Society for library purposes. Large purchases from this fund, consisting of books and journals from both European and American dealers, have already been received, and physicians visiting the library will find great improvements. Other large purchases are expected within a week or two, and it is hoped to be able to complete the work of developing the library from this fund about October 1st. Members of the State Society should bear in mind that they have full privileges of the use of the library and of borrowing books by express, on paying the actual expenses of shipment. The attendant, Miss M. Malins, will gladly look up references called for by letter.

The Western Slope Medical Society, on June 25th, held a successful "get together" meeting at Delta.

Dr. J. R. Robinson of Colorado Springs was visited by burglars a few weeks back.

Several physicians at Windsor, Colo., who had rendered accounts of \$150 each for services during a scarlet fever epidemic, have declined to accept warrants of \$25 each with which the town council sought to make settlement.

Dr. and Mrs. W. A. Kickland of Fort Collins have left for a three months' tour in Europe.

Dr. J. F. Dawson, who had practiced at Platteville since 1898, latterly in partnership with his half-brother, Dr. B. F. Kern, died suddenly on June 6th. On the morning of the day of his death he had bought a new automobile, which he had driven from Denver to Platteville.

Dr. J. G. Schall, a member of the Colorado Ophthalmological Society, and who three years ago took over the practice of Dr. E. T. Boyd at Leadville, was found dead in his office on June 17. He was only 38 years old.

Dr. T. D. Palmer of Cañon City died at his home on June 10th, after an illness of nearly three weeks. Doctor Palmer, who was 64 years old, had practiced at Dallas, Texas; Minden, Mo., and Cañon City, where, with the exception of a few years in Denver, he had practiced since 1879.

Dr. E. A. Wheeler, formerly a Denver practitioner, but since 1908 located at Goldfield, Nev., was killed instantly in an automobile accident between Goldfield and Tonopah on June 9th. Three other men died in or from effects of the same accident. Doctor Wheeler was 58 years old.

Dr. H. R. Stilwill recently moved from his office in the Majestic building to No. 224 Metropolitan building, Denver.

Dr. and Mrs. L. L. Patterson are enjoying a three months' voyage on the Pacific Ocean.

Dr. G. M. Blickensderfer is spending a couple of months or so in post-graduate study in pediatrics in eastern cities.

Dr. H. T. Low of Pueblo recently sustained slight injuries as the result, it is said, of careless handling of an automatic revolver.

Dr. G. L. Monson of Denver was slightly injured on the evening of June 27th in a collision between his automobile and a street car. The Doctor was on his way to Mercy Hospital with a patient, who escaped without injury.

Dr. P. V. Carlin, member of the Denver School Board, was temporarily disabled in the latter part of June by a slight cerebral thrombosis.

Dr. J. E. Downs of Craig was unconscious for three hours as the result of a blow on the head from the crank handle of his automobile on June 2nd.

Dr. P. M. Chase of Denver was recently married to Mrs. Octavie W. Morley of Colorado Springs.

Dr. H. B. Shoup, who recently settled at Grand Junction, has returned to his former location at Fort Wayne, Ind.

Dr. J. F. Roe, assistant surgeon to the Den-

ver & Rio Grande railway, was married on June 9th to Mrs. L. H. Malcouronne.

In the "News Notes" of our June issue it was incorrectly stated that Dr. A. C. Magruder, Dr. Beverley Tucker and Dr. Elmer L. Timmons had been elected, respectively, as president, vice president and secretary-treasurer of the El Paso County Medical Society. The gentlemen named were elected to the corresponding offices in the Colorado Springs Clinical Club. No change has occurred as regards the officers of the El Paso County Medical Society.

Dr. and Mrs. W. V. Mullin of Colorado Springs have just returned from an extensive European tour.

Dr. and Mrs. W. A. Campbell of Colorado Springs have recently returned from an automobile tour of the eastern states.

Dr. H. G. Wetherill expects to leave some time in July for a tour of the Yellowstone and Glacier National Parks. The Doctor will take a rest by leaving the automobile at home this time. More power to his kodak!

Dr. G. F. Libby writes that both Mrs. Libby and he have been greatly benefited by their vacation in the East.

Dr. C. P. Steeves left in June for a tour of England and the European continent.

Dr. M. D. Healy will start about the middle of August for a six weeks' visit to Ireland and the old folks.

Dr. T. M. Burns has been doing special work in the Lying-in Hospital in New York.

The Board of Lady Managers of the Children's Hospital (of which Mrs. George Berger is president) recently selected Mr. Biscoe to accompany Doctors Packard and Fosdick Jones to New York, with a view to conferring with architects specializing in hospitals. The coming fall is expected to see the beginning of building a new children's hospital at the corner of East Nineteenth avenue and Downing street, to contain 150 beds. The new hospital is now four years old and has long since outgrown its present quarters.

Dr. J. W. Amessee has been doing post-graduate work in the diseases of children in New York, Philadelphia and Boston.

Dr. and Mrs. Leonard Freeman left on June 8th to join other members of the Surgeons' Travel Club of America, who were to proceed on a tour of the European surgical clinics. The tour will terminate at the meeting of the Clinical Congress of Surgeons in London, England, which begins July 27th.

The ladies of Boulder are planning some unique entertainments for the visiting ladies, and it is a well-known fact that they are not easily outdone in their hospitality, so it is hoped that you will bring the family along and have a good time.

It is advised that members begin to make their hotel reservations, as there will evidently be a large crowd. The new Boulderado is notorious for its cuisine, and the O'Connor is starting out as if it intended to make a reputation for itself.

Constituent Societies

PUEBLO COUNTY.

The **Pueblo County Medical Society** met in regular session May 5, 1914, President Singer presiding. There were twenty-two present.

The minutes of the previous meeting were read and approved. The applications of Dr. J. F. Guthrie and Dr. Jno. G. Wolf were reported favorably by the membership committee.

A most excellent paper on "The Probable and Positive Signs of Pregnancy" was presented by Doctor Marmaduke. It was highly entertaining as well as instructive. The discussion was opened by Doctor Adams, followed by Doctor Maynard, who spoke at length on "Abderhalden's Test."

The Society voted that after September 1st there should be a meeting of the Society each week, and instructed the program committee to prepare a program for the extra sessions.

A communication was read from the American National Red Cross regarding organization for Red Cross work in this Society. The following Committee on Red Cross Medical Work was appointed: T. A. Stoddard, chairman; J. E. Peairs, Luke MacLean, W. F. Singer, J. H. Woodbridge, ex-officio.

The Society then adjourned.

J. H. WOODBRIDGE, Secretary.

EL PASO COUNTY.

The regular monthly meeting of the **El Paso County Medical Society** was held at the Antlers hotel, May 13, 1914, at 8:15 p. m.

The president, Doctor Giese, presided.

The committee appointed at the last meeting to investigate the advisability of a municipal hospital for the care of contagious diseases reported that the city was badly in need of such a hospital, and recommended that a committee of three be appointed to confer with the city commissioners in any way possible to obtain the same. The president appointed the following committee: Doctors Martin, Boyd and McClanahan.

A communication was read from Major Robert M. Patterson, in charge of the First Aid Department of the Red Cross medical work of the American Medical Association, relative to the appointment of a local committee on Red Cross work. The president appointed the following committee: Doctors Giese, Gilmore, McConnell, Moses and Hanford.

Dr. L. Gordon Brown gave a lantern-slide exhibit of some X-ray work on the gastrointestinal tract, which was very complete and exceedingly interesting to all present.

G. B. GILMORE, Secretary.

The regular monthly meeting of the **El Paso County Medical Society** was held at the Antlers Hotel on June 10, 1914.

Dr. J. F. McConnell, vice president of the society, called the meeting to order.

There were twenty-nine members present.

A letter from Mayor McKesson was read

which acknowledged the receipt of the resolutions on municipal hospital passed at the last meeting of the society.

The following program was then rendered: Symposium, "Question of Prophylaxis in Acute Infection of the Upper Respiratory and Auditory Tracts.

1. Dr. J. R. Robinson: "Modus Operandi of Infection Forces Upon the Upper Respiratory Tract."

2. Dr. A. R. Solenberger: "Nose."

3. Dr. D. A. Vanderhoof: "Nasal Accessory Sinuses."

4. Dr. A. C. Magruder: "Ear."

5. Dr. F. L. Dennis: "Throat."

Discussed by Doctors Giese, Timmons, Webb, Mayhew, Trossback, James, Stough and McConnell.

The society voted to have the next meeting on October 14, 1914.

GEORGE B. GILMORE, Secretary.

FREMONT COUNTY.

The regular bi-monthly meeting of the Society was held at Florence on the evening of May 25th.

Members present: Doctors. Goodloe, Clarke, Cummings, Adkinson, Hutton, Rupert and Little. Guest, Doctor Ashley of Cañon City.

The paper of the evening was entitled, "Vaginal Hemorrhage in the New Born," read by Doctor Goodloe. He declared this condition is much commoner than the reported cases would lead one to think, because it is frequently concealed by the nurse. The bleeding appears before the fourth day and lasts less than a week. There are no pathologic changes, and the cause is thought to be a placental secretion. He reported three cases. Doctor Rupert opened the discussion.

Dr. W. M. Shultz of St. Elmo was elected to membership.

The serious illness of Doctors Rambo and Palmer was reported, and the secretary was directed to send flowers.

DR. W. T. LITTLE, Secretary.

EASTERN COLORADO.

To the Members of the **Eastern Colorado Medical Association**:

The committee on Red Cross medical work of the American Medical Association, having requested that each of the several County Medical Societies form sub-committees, to be known as the "Committees on Red Cross Medical Work," I desire to report that the Committee on Red Cross Medical Work for Yuma and Washington Counties has been appointed and is as follows: Edwin A. Clarke, Akron, president; J. W. Kaylor, Akron; M. Smith, Akron; J. E. Cavey, Yuma; Earl D. McGill, Wray, secretary.

In case of disaster, requiring relief action by the Red Cross, the above named committee nominates qualified medical men from Yuma and Washington Counties for Red Cross service.

Physicians in the named counties desiring

to act in the service of the Red Cross, if called upon, kindly advise the president or secretary of the above named committee.

EARL D. MCGILL, Secretary.

MESA COUNTY.

The Mesa County Medical Society met in regular session on Thursday evening, May 21, 1914, at Y. M. C. A. building. On account of the absence of the secretary, Dr. Harrington, Dr. Taylor acted as secretary pro tem. Upon roll call the following answered to their names: Dr. Porter, Hanson, Sickenburger, Henderson, Plumb, Needham and Taylor.

Dr. W. T. Adams was to have read a paper entitled "Puerperal Eclampsia," but on account of sickness was unable to be present.

Dr. Taylor presented a paper entitled "Our Responsibility in the Child Welfare Problem." Discussion was opened by Dr. Sickenburger and was continued by Drs. Hanson, Porter, Plumb, Needham and closed by Dr. Taylor. In the discussion of this paper it was suggested by Dr. Needham that a committee be appointed to investigate and consider the opening of a child-welfare campaign in Grand Junction. The suggestion was incorporated in the form of a motion by Dr. Plumb, seconded by Dr. Hanson, put to a vote and carried. The president appointed Drs. Taylor (chairman), Plumb and Bull to serve on said committee.

Drs. Woolwine and Larson were to have presented case histories, but neither gentleman was present.

The chairman of the board of censors reported favorably upon the application of Dr. W. T. Adams to become a member of this society and upon regular ballot, the doctor was declared elected to membership.

A letter was read from Dr. A. P. Hubbard in which he expressed appreciation of the message of condolence sent recently by the society, and upon occasion of the death of Mrs. Hubbard.

A communication was read from the First Aid Department of the National Red Cross, in which a request was made that a "Committee on Red Cross Work" be appointed. This work bears especially, at this time, upon the Mexican situation. The following committee was chosen: Drs. Harrington (chairman), Porter and Henderson.

The applications of Dr. Homer B. Sharp and Dr. J. L. Tadlock for membership in this society were referred to the board of censors.

DELTA, MESA AND MONTROSE COUNTY MEDICAL SOCIETIES.

The Delta County Medical Society met in the banquet rooms of the M. E. Church, Thursday evening, June 25, 1914, at 7 p. m.

Mesa and Montrose County Societies were present as guests of the Delta Society.

Members present: Doctors Bast, Bolton, Burgess, Burgin, Cleland, Day, Erich, Hadsell, Hazlett, Hick, Lewis, McGrew, Miller, Myers, Porter and Smith. Visitors: Doctors Bull, Harrington, Henderson, Plumb, Porter and Shoup

of Grand Junction; Doctors Allen, Bell, Brethouwer, Didrickson, Grove, Knott, Lockwood, Robb and Schermerhorn of Montrose.

The visiting doctors were entertained at the home of Dr. H. A. Smith by Doctors Smith and Hick. At 7 p. m. a sumptuous dinner was served by the Art Section of the Woman's Club in the parlors of the M. E. Church.

Dr. L. A. Hick filled the chair in the absence of Dr. J. P. Claybaugh, the president, who had to be away on account of sickness in his family.

The first paper of the evening was read by Doctor Knott of Montrose, his subject being "The Value of Organization in the Medical Profession." This was a very interesting paper. Discussed by Doctors Hazlett, Robb, Smith and Schermerhorn.

Doctor Bull of Grand Junction read a most instructive paper on "Gastric Ulcer." The subject was well discussed, bringing out the latest methods of treatment and ideas on the subject.

Doctor Henderson of Grand Junction read a short paper in connection with Doctor Bull's, giving the percentage of ulcers and cancers, and other statistics. Discussed by Doctors Henderson, McGrew, Robb and Bull.

The last paper of the evening was read by Doctor Hick of Delta.

TYPHUS FEVER.

The disease now known to the text-books as typhus fever has only within recent times been accurately differentiated from typhoid. Even today mistakes in diagnosis sometimes occur as between the two conditions. Until 1912, says Goldberger,* American physicians regarded typhus as an exotic plague, possessing little interest for this country. In that year Anderson and Goldberger showed that the disease was endemic in the city of New York, and it has since been reported as occurring in Philadelphia, Atlanta, Milwaukee, Chicago and Boston. In a recent issue of the New Mexico Medical Journal, Day of Albuquerque reports an epidemic of typhus fever, with four deaths in twenty-seven patients, among the Navajo Indians at Canoncito Cojo, N. M. An invasion from abroad has lately been threatened, at least nineteen cases having been discovered in immigrants arriving from Europe. The disease is not one of the tropics, but of temperate and cold climates. In Mexico, for instance, it is found only in the elevated plateau region, from 6,000 feet upwards.

As the result of studies by Nicolle and his associates in Tunis, by Ricketts and Wilder, and by Goldberger and Anderson (working in the city of Mexico) it is now positively known that typhus fever is transmitted from person to person by the body louse (*pediculus vestimenti*). This explains "why typhus has been peculiarly associated with misery and poverty, why it has been a vagabond disease, a disease of jails and army camps." Its individual prophylaxis depends essentially on avoidance of contact with persons who are likely to harbor lice.

*Reprint No. 187 from the U. S. Public Health Reports.

Book Reviews

Some American Medical Botanists, Commemorated in our Botanical Nomenclature, by Howard A. Kelly, M.D., LL.D., Troy, N. Y. The Southworth Company. 1914. Price, \$3.

Doctor Kelly here gives us another illustration of his versatility and varied intellectual interests, and in so doing illustrates the pleasure and profit a busy professional man may have in wandering into other fields of science which lie in the borderland of that in which he has distinguished himself. This work, which he calls an "oeuvre d'amour," expresses the extreme delight he has taken in early and frequent meanderings through botanical fields, pursuing the secrets of nature from the pure love of it, and in collecting personal data of American physicians and others with whom he has either come into contact or whose work he has followed as that of a master. Briefly he gives sketches of many men whose names are household words in medicine—Caspar Wistar, for whom the wistaria was named; Samuel Garden, whose name the gardenia bears; Asa Gray, George Engelmann, David Hosack and others.

The book is tastefully made and beautifully illustrated with portraits, fac similes of letters and old title pages and of botanical specimens. The text itself is most entertaining, and we commend the book to all who would spend a few idle moments pleasantly in the company of some of the intellectual giants of our profession who have interested themselves in the beauties of nature and from whose labors and devotion to pure science the profession of medicine and the public are reaping lasting benefits.

W. A. J.

The Pathogenesis of Salvarsan Fatalities, by Sanitäts-Rat Dr. Wilhelm Wechselmann, directing physician in the dermatological department, Rudolph Virchow hospital in Berlin. The Fleming-Smith Company, Medical Publishers, St. Louis, U. S. A. Price, \$1.50.

In this little book Wechselmann has reviewed and analyzed a large number of reported fatalities following the use of Salvarsan, and attempts to prove that death in no instance has been due directly to the Salvarsan but has occurred only in individuals with some organic deficiency, principally of the kidneys.

His studies show that the post mortem findings are in no way similar to those after death due to arsenical poisoning but closely resemble those of uremic poisoning induced, he thinks, by the failure of damaged kidneys to function when subjected to the excess work of eliminating the injected salvarsan.

Furthermore, he believes that the damage to the kidneys is usually the result of previously administered mercury, since that drug is known to cause nephritis; he protests therefore against the use of combined Salvarsan and mercury unless the mercury be given long after the Salvarsan, his preference being for pure Salvarsan therapy which should be

adopted in every case to the needs of the patient and based upon a most careful and thorough examination particularly of the urine.

As a guide to the employment of a method of treatment which beyond doubt has grave dangers and has greatly been abused, this little book is of great value and is a model for those who wish to pursue the scientific investigation of any case which might terminate fatally.

A. J. M.

Diseases of the Skin. New (7th) Edition, Revised. A Treatise on Diseases of the Skin. For the use of advanced students and practitioners. By Henry W. Stelwagon, M.D., Ph.D., Professor of Dermatology, Jefferson Medical College, Philadelphia. Seventh Edition, thoroughly revised. Octavo of 1,250 pages, with 334 text-illustrations, and 33 full-page colored and halftone plates. Philadelphia and London. W. B. Saunders Company, 1914. Cloth, \$6.00 net; half morocco, \$7.50 net. W. B. Saunders Company, Philadelphia, London.

Stelwagon has long been the standard American text on this subject and the present edition in every way sustains that reputation. The previous chapters have had added to them much that is new in the way of recent developments, and there are a number of entirely new chapters devoted to the consideration of dermatoses but recently described and classified.

The chapters on Syphilis present the modern conceptions of the diagnosis and treatment of this disease in a most rational manner.

There are many new illustrations in conformity with the idea that knowledge of skin diseases is acquired by pictorial description better than by written.

On the whole this book will meet in the most adequate manner the demands of those who require a practical guide to diagnosis and treatment of diseases of the skin.

A. J. M.

Essentials of Nervous Diseases and Insanity.

By John C. Shaw, M.D., Late Clinical Professor of Diseases of the Mind and Nervous System, Long Island College Hospital. Fifth edition, thoroughly revised, by Louis Casamajor, M.D., Chief of Clinic, New York Neurological Institute. 12mo. of 187 pages, illustrated. Philadelphia and London: W. B. Saunders Company, 1913. Cloth, \$1 net.

The reviewer looks on all books belonging to the class of "quiz compend" with a certain dislike. The student, though buying the book with the legitimate object of using it as a help in reviewing a subject is only too apt to yield to the temptation to confine his studies to memorizing the pages of the compend. With this reservation the compend on nervous diseases and insanity by Doctor Shaw can be warmly recommended. It is surprising, even fascinating, how much the writer has been able to crowd into such a small space. But for all their conciseness, the descriptions of the various diseases and syndromes are clear and readable.

G. E. N.

Psychoanalysis: Its Theories and Practical Application. By A. A. Brill, Ph.B., M.D., Chief of Clinic of Psychiatry and Clinical Assistant in Neurology, Columbia University Medical School; Chief of the Neurological Department of the Bronx Hospital and Dispensary. Second edition, thoroughly revised. Octavo of 393 pages. Philadelphia and London: W. B. Saunders Company, 1914. Cloth, \$3 net.

The second edition of Brill's book on Psychoanalysis comes from the publishers only fifteen months after the first. This shows how general the interest in this method of studying nervous and mental diseases has become. Whether a "Freudian" or not, every physician alive to the importance of the psychological factor in medicine must sooner or later make himself familiar with the theories of Freud and his school. While undoubtedly Freud goes too far in referring all psychoneuroses to sexual traumata, especially infantile sexual traumata, it cannot be denied that he has done a great service to neurology through drawing our attention to the exceeding importance of the sexual factor in the neuroses. Brill's book serves as an excellent introduction to the study of Freud's writings and makes the student acquainted with the principles of Freud's psychology and his conceptions, many of which lie outside the confines of orthodox psychology. This second edition has been enlarged by the addition of two new chapters, one of which deals with the "Unconscious Factors in the Neuroses." The other chapter added is an interesting study of the rôle of "Fairy Tales as a Determinant of Dreams and Neurotic Symptoms." A welcome addition to the student of the book will be the glossary of terms frequently used in psychanalytic literature. Besides these new additions the book has been thoroughly revised. Some very instructive case histories, fragments of dream analyses, etc., have been added, which materially help to elucidate a rather difficult subject.

G. E. N.

The Entertainment Committee of the Boulder County Medical Society especially requests all of the Denver members to plan to remain the entire three days, since it has been predicted that the attendance would be very much diminished by Denver physicians running up late in the day after completing their morning's work, and hurrying back in the afternoon in time to do evening work.

Boulder has six ample garages, so that there will be no need of returning to Denver on that account.

It is a recognized fact that the greatest good is to be attained, both scientifically and socially, where members tear themselves away as completely as possible from their daily work.

Let's make this a banner meeting, where everybody will get acquainted with everybody else!

PARALYSIS FROM TICK-BITE.

The following quotations are from a letter recently sent by Dr. J. L. Todd, professor of parasitology in McGill University, Montreal. Physicians who have had experience along the lines mentioned by Doctor Todd should communicate with him on the subject:

"The recently published clinical and experimental experience of physicians in several parts of the world has made it certain that paralysis may follow, in some cases, when children—and also sheep and dogs—are bitten by ticks. The symptoms somewhat resemble those of infantile paralysis, but recovery follows a complete and cleanly removal of the tick, which usually attaches itself near the nape of the neck. Since ticks do not normally exist in towns, cases of tick-bite have only been reported among those who live in sparsely inhabited districts.

"It would add to our knowledge of the relation between tick-bite and the occurrence of a fugitive paralysis in children if every practitioner who attended a case of sudden paralysis were to carefully search the body of his patient for ticks. In one doubtful instance paresis in an adult has been reported to have followed a tick-bite."

A Poor Suitors Act has recently come into operation in England. People who desire to appeal to the courts and are worth less than \$250 can, if their applications are approved, obtain a free hearing, with free legal aid and no court fees. "Solicitors" and "barristers" will be found for them, and their case fairly gone into. Within the first week after the act became effective, eight hundred lawyers had agreed to serve, and fourteen hundred applications had been received from prospective litigants. Many of the applications were said to be by husbands and wives who wanted divorces but had been unable to get them for lack of money.

There can be no doubt that disease has overthrown civilizations in the past, and there is no surety that it may not do so again. The recent outbreak of the plague in Manchuria, and its more recent appearance in Cuba, are not without their warnings. It remains to be seen if those who control our government have the intelligence necessary to protect our country against the invasion of pestilence. The failure to provide camp sanitation in 1898, the behavior of the California officials on the finding of the plague in San Francisco, and the general indifference of national and state authorities toward the eradication of disease discourage the hope that intelligent patriotism is widely distributed among us. As a contemporary of Mr. Dowie and Mrs. Eddy, and as a citizen of a country in which the osteopath and chiropractic flourish, I feel some embarrassment in speaking of the fanaticism and ignorance of the dark ages.—Victor C. Vaughan, President A. M. A.

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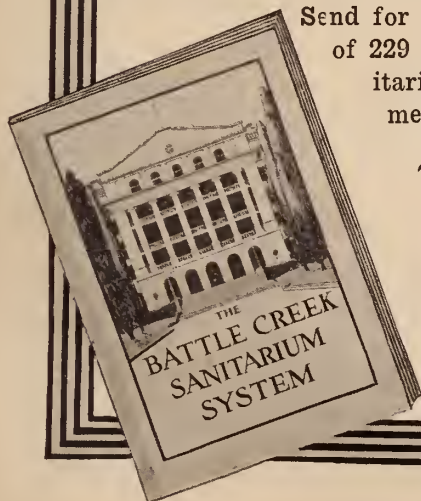
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Colorado Medicine

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PUBLICATION COMMITTEE.

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Editorial Comment

THE PROGRAMME.

So far as may be possible, this issue of Colorado Medicine will contain the programme of the annual meeting of the State Medical Society, which is to be held in Boulder on September 8th, 9th and 10th. Our July number gave some account of the plans of the Entertainment Committee for the social and recreative features of the gathering. The scientific programme promises to be as interesting as any which has been arranged in the forty-three years of the society's existence. Dr. Hideyo Noguchi, of the Rockefeller Institute of Medical Research, will offer an address of exceptional interest on some recent bacteriologic problems, and there will also be special addresses by other guests.

Not the least profitable part of any scientific meeting is the general discussion which follows the set papers. While some speakers are capable of offering very desirable contributions to debate without having made special preparation, the average man is better able intelligently to criticise and supplement the views of the principal speaker if he has devoted some time in advance to considering the lines along which he will talk.

It is in part to furnish opportunity for such premeditation that the abstracts of authors' papers are published in Colorado Medicine. If each individual member who attends the sessions at Boulder will devote some previous thought to the topics which he is to hear presented, the meeting will prove more interesting and profitable to everyone concerned.

THE ADVERTISING PROBLEM.

Among the delectable experiences provided for the new editor shortly after he unsuspectingly assumes his duties is the receipt of requests for "puffs" of articles whose manufacturers pay for space in the advertising columns. It is not altogether unnatural that individuals and firms who pay for advertising should wish to receive the best possible commercial return. To business men whose dealings in this respect are largely with the debased hireling commonly known as a daily newspaper, it is probably difficult to appreciate that no respectable medical journal and no self-respecting editor can comply with their requests.

The members of the Colorado State Medical Society did not establish Colorado Medicine primarily as a commercial venture. Yet it must be recognized that even in medical journalism success is in some degree to be measured by the ratio be-

tween pecuniary income and outlay. The advertising in Colorado Medicine will be found to be singularly free from preposterous or iniquitous claims. Those members of the State Society who do not deny that advertising is necessary for the existence of their journal, should be willing to support, so far as is honorably in their power, the merchants whose products are advertised in its columns; and it is entirely consonant with professional decency to let the producer know the name of the journal in which his advertising matter was encountered.

THE CHANGE IN EDITORSHIP.

In order to avoid delay in delivery of mail, and to prevent inconvenience to the late editor, Dr. C. S. Elder, attention is called to the fact that all correspondence and scientific or news matter intended for Colorado Medicine should now be addressed to Dr. W. H. Crisp, 318 Majestic building, Denver.

A very enjoyable feature of the Boulder meeting will be the excellent opportunity given to view Boulder Cañon by automobile. This is one of the beautiful cañons of the state and the road is now being double-tracked throughout, so that the ride will not only be pleasant but safe.

Another wonderful drive is up the new zig-zag motor road on to Flagstaff Mountain. This gives one of the most wonderful valley views to be had anywhere. From the summit twenty-two lakes can be counted within a radius of fifteen miles, and an exceptional view of the main range is obtained.

The **HEADQUARTERS** of the meeting will be at the Boulderado Hotel. All **SCIENTIFIC SESSIONS** will be held in the Physicians' Block, except in the forenoon of Wednesday, when they will be held in the buildings of the University.

ABSTRACTS OF PAPERS

To Be Read at Forty-fourth Annual Meeting of Colorado State Medical Society, at Boulder, Colorado, September 8th, 9th and 10th, 1914.

NOTE—At the time of going to press with the August number, it has not been possible for the Program Committee to arrange the sequence of the scientific program from day to day. A number of titles and abstracts of papers to be read have even yet not been sent in. The following titles and abstracts are therefore arranged in alphabetical order of the authors' names. Those members who have arranged to read papers will receive the completed program as early as possible before the meeting. Others will be furnished with copies at the time of the meeting.

EMERGENCY SURGERY WITH SPECIAL REFERENCE TO THE TREATMENT OF COMPOUND FRACTURES.

Bon O. Adams, M. D., Pueblo.

Classification of surgical procedure as emergency and elective with reasons why emergency surgery requires experience and equipment.

Care of injuries to bones:

1. Dislocations.

2. Fractures. Classification as to structures involved. Diagnostic methods. Into and about joints. Compound fractures. Every compound fracture a hospital case. Special diagnostic methods. Comparison of tissue susceptibility to infection with other frequently operated tissues. Processes of repair, in soft parts, and in fractured bone.

A plea against the practice of "watchful waiting" while a compound fracture becomes converted into a simple one by healing of soft parts, before applying internal bone splints such as silver wire, steel plates, etc. Report of three cases of bone-graft splint following failure of union under plating.

CHRONIC INTESTINAL INDIGESTION IN CHILDREN: ITS ROLE IN THE PRODUCTION OF EPILEPSY.

John W. Ames, M.D., Denver.

Idiopathic epilepsy still a closed book. A certain number of cases, however, in

children, and a much larger proportion than generally believed, may be classed as reflex, accidental or symptomatic. Clinical picture identical with primary form.

True epileptic seizures grafted upon a state of nervous instability beginning often with convulsions in infancy. Spasmodic condition maintained and increased throughout childhood by poorly chosen dietary, rapid eating and overeating, resulting in chronic intestinal indigestion, putrefaction, absorption and intoxication. Constipation an important factor. Value of prophylactic treatment in predisposed children. Management in the chronic type. Illustrative cases showing improvement under proper hygienic regime.

EXPERIENCE IN INFANT FEEDING BY THE "FINKELSTEIN" METHOD.

G. M. Anderson, A.M., M.D., Denver

In well babies: Simple dilutions of whole cow's milk (one-third, one-half, two-thirds) with water. Maltose the best sugar to use. Two to five per cent. No lime water. No percentage system. Four-hour interval feedings.

Nutritional disorders: Present tendency to give more importance to food itself, as disturbing factor, and less to bacteria in nutritional disorders. Fat and sugar the chief disturbing elements and not the proteids, as formerly believed. Bacteria play a small part in these nutritional disorders, except in ileo-colitis.

Method of feeding sick babies: Simple mixtures, proper proportion of whole milk and water; fat free milk and water; boiled whole milk and barley water; boiled skimmed milk and water; butter-milk; "Eiweiss Milk," mode of preparation and indications. Abt states Eiweiss Milk next to breast milk in value in these disorders. "Malt Soup," "Four Ball" and "Maltose."

Disintoxication: Dangers of therapeutic

starvation. Weak tea only used for periods of 24 to 36 hours.

Rôle played by heat: Acts by "heat stroke" and not by increasing bacteria in milk. Child should be kept cool.

Modification of casein curds; treatment of continuous vomiting; whey condemned.

SOME INTERESTING FEATURES OF INDUCED PNEUMOTHORAX, WITH SKIAGRAPHIC DEMONSTRATIONS.

Wm. N. Beggs, A.B., M.D., and Arnold S. Taussig, M.D., Denver.

Pneumothorax not to be lightly undertaken for pulmonary tuberculosis. Principles in selection: stage and duration of case, activity of process, cavitations, condition of other lung.

Use of skiagraphy in estimating desirability of pneumothorax and probability of success.

Manipulative technique. Need for careful technique in manometric manipulations, for frequently testing all connections and for ample and exact manometric records. The "pull" on manometer as indication of "air hunger," of amount of gas to be introduced, and of probable benefit. Estimation of presence and size of pocket; by physical examination, skiagraphy, manometric readings and amount of gas used. Careful general management of cases. Pneumothorax not a "specific cure."

Regulation of pneumothorax. Frequency of repetition. Rapidity of compression. Hemorrhagic cases. Loss of weight. Significance of exudates. Accidental pneumothorax in addition to induced. Adherent pleura.

DEATH FROM HEMORRHAGE FOLLOWING PERITONSILLAR ABSCESS; AUTHOR'S METHOD OF OPENING PERITONSILLAR ABSCESS.

Thomas E. Carmody, M.D., and William C. Finnoff, M.D., Denver.

Hemorrhage with death following a peritonsillar abscess in a child of three

years. Review of literature on hemorrhage following peritonsillar abscess.

Methods of opening peritonsillar abscess. Deaths following incision generally attributed to opening a large vessel.

Normal and pathological anatomy.

THE ROENTGEN RAY DIAGNOSIS OF ULCER OF THE STOMACH AND DUODENUM.

Samuel B. Childs, M.D., Denver.

The importance of making an early diagnosis in these conditions cannot be emphasized too strongly. The diagnosis in many of these cases by means of the ordinary clinical tests is unsatisfactory, and it is in the unrecognized cases that frequently perforation of the stomach or duodenum is the first positive indication that an ulcer exists. It is accepted that the majority of cases of cancer of the stomach probably have their inception in or around an ulcer base, hence the importance of using an agent which will be of great assistance in making an early diagnosis of ulcer in all cases of stomach trouble that do not yield promptly to appropriate medical treatment. It has been thoroughly demonstrated that the Roentgen Ray is such an agent, and that its findings when properly interpreted are reliable and accurate. The Roentgen findings in ulcer of the stomach and duodenum will be illustrated by lantern slides.

UNUSUAL ABNORMAL ENLARGEMENT OF THE DUODENUM.

R. W. Corwin, M.D., Pueblo.

How common is an abnormally enlarged duodenum? Is it pathologic or congenital? If the former, what are its causes? Does enlargement of the duodenum give rise to disease or distress? If so, what are the symptoms and what should be done for relief?

REFRACTION AND CONVERGENT STRABISMUS.

Wm. H. Crisp, M.D., Denver.

Reemphasizes the etiologic importance of refractive error in the production of convergent strabismus. Thorough correction of refraction will cure the majority of cases if taken early enough. The close coordination between accommodation and convergence. Need for full correction of the hyperopia or hyperopic astigmatism usually present, and which even in very early infancy can be estimated very closely by use of the retinoscope. Even if the eye with the greater error be amblyopic, full correction of the seeing eye is essential. Report of case in which undercorrection of the seeing eye was apparently responsible for convergence of the other eye, which was practically blind.

SOME TYPES OF CARDIAC IRREGU- LARITY.

Carroll E. Edson, M. D., Denver.

The clinical importance of the new knowledge of the mechanism of the heart's action.

The control of the normal rhythm.

Disturbances of this rhythm and their importance.

Three types of irregularity selected for discussion. Their recognition and varying importance. Premature systole, heart block, auricular fibrillation.

SOME AFFECTIONS OF THE EYE FROM UNDUE EXPOSURE TO LIGHT.

William L. Hess, M.D., Denver.

Reviews the scientific work and observations of Herzog, Hess, Vogt, Crookes, Schanz, Posey, Behr, Birch-Hirschfeld, Elliott, Harman, Parsons, Edridge-Green, Priestley Smith, Luckiesh, Fox, N. M. Black and others upon the subject of special interest to the profession at high altitudes; deducing practical applications as to the prevention of snowblindness, oph-

thalmia electrica, etc. The communications (summarized here) made at last year's International Medical Congress in London, are of special interest and importance.

UNCONSCIOUS MENTAL PHENOMENA: A STUDY IN PSYCHOLOGY.

John Inglis, M.D., Denver.

General interest in the subject. Medicine and psychological phenomena have much in common. Consciousness and unconscious phenomena defined. What is consciousness? Its development. Facts of consciousness and so-called unconscious mental phenomena. The sub-conscious mind—what is it? How account for unconscious mental states?

PITUITARY EXTRACT IN OBSTETRICS.

Clarence B. Ingraham, M. D., Denver.

Conclusions from observations upon the use of pituitary extract in 40 obstetrical cases; its effect upon the uterus; rise of blood pressure; slowing of maternal pulse; intestinal peristalsis and bladder; something of its galactagogue property; effect upon the fetus; its indications and contra-indications.

DISEASE OF THE SMALL BLOOD VESSELS AS STUDIED WITH THE OPHTHALMOSCOPE.

Edward Jackson, M.D., Denver.

Our knowledge of vascular disease began with studies of the large vessels. Lesions of the small vessels have been observed chiefly in the retina; where they can be studied under favorable conditions during life, as well as after the excision of the eye when disease (usually glaucoma) renders this necessary. Such studies give our most exact knowledge of endarteritis, periphlebitis, embolism and thrombosis, arterial spasm, angiomatosis, new-formed vessels and hemorrhage; and of the connection of acute infections, tuber-

culosis, syphilis, scurvy, anemias, toxemias, arterial hypertension, etc., with such lesions. The wide significance and importance of lesions of the small vessels in general disease justifies their study by those engaged in every branch of medical practice.

BRAIN ABSCESS OF OTITIC ORIGIN.

Fritz Lassen, M.D., Pueblo.

THE NASAL TREATMENT OF DYSMENORRHEA.

L. B. Lockard, M.D., Denver, Colo.

Certain physiological phenomena show an intimate relationship between the nose and the sexual organs, particularly in the female.

Various experiments prove this relationship limited to definite areas in the nasal mucosa which have been designated "genital spots."

These areas, during menstruation and pregnancy, and occasionally at puberty and menopause, swell, bleed easily and are sensitive to touch.

Mechanical and electrical irritation of these points produce contractions of the uterus.

Cocainization of the genital spots, in a considerable proportion of cases of dysmenorrhea, causes temporary cessation of pain, and their cauterization frequently leads to permanent cure.

Labor pains have also been lessened temporarily by anesthetization of the nose, and there are well-authenticated reports of cases of amenorrhea cured by the same treatment.

We are still in the dark regarding the exact *modus operandi* of these phenomena.

SURGICAL TREATMENT OF ACUTE EPIDIDYMITIS.

Oliver Lyons, M.D., Denver.

The classic treatment of acute epididymitis by the use of local applications of

heat, cold, revulsive and antiphlogistic medication has been used many years, but at times gives little or no relief. In most cases resolution is equally tedious with or without their use. When compared with the surgical treatment, epididymotomy, there is no virtue in their perpetuation. Author's preference for epididymotomy as a more rational method of treatment.

No operation in genito-urinary surgery has given more gratifying results. It is without danger as regards anesthesia, because local anesthesia can be used. Immediate abatement of all symptoms for which patient seeks relief. Results important from economic point of view, as loss of time from work is greatly diminished, and it is logical to believe patient will have far greater opportunity to recover without occlusion of the epididymal ducts if the duration of inflammation is lessened and the products of inflammation removed.

TUBERCULIN TREATMENT.

John F. McConnell, M.D., Colorado Springs.

The renaissance of tuberculin therapy; its place in institutions; the author's feeling that tuberculin treatment is entirely removed from the realm of doubt; the motif of tuberculin; what may be reasonably expected from therapeutic tuberculin; recognition of its limitations; selection of a preparation; the clinical advantages of an albumin-free tuberculin; methods of administration; the optimum dose; clinical evidences of a specific response; the results.

MODERN VIEWS ON BILIARY CALCULOSIS.

J. L. Mortimer, M.D., Denver.

Etiology and Pathogenesis.—Age and sex, gallstone carriers and gallstone sufferers, causes of gallstone formation, Naudin's theory, origin of cholesterol, part played by bacteria, views of Aschoff and Baumeister, factors causing stasis of bile,

causes producing symptoms of first attack, relation of cholelithiasis to pregnancy, labor and typhoid fever.

Pathology and Diagnosis. — Clinical types observed: (a) Gallstone colic with sudden occlusion of ductus choledochus and recurrent cholelithiasis. (b) Inflammation of reservoir system (gallbladder and ductus cysticus), acute cholecystitis and its complications. (c) Chronic choledochus occlusion, differential diagnosis of icterus. (d) Malignant complication—carcinoma.

Therapy.—Prophylactic, medical, surgical.

THE TREATMENT OF WEAK AND FLAT FEET.

George E. Packard, M.D., Denver.

Discussion opened by S. F. Jones, M.D.

Definition and description of the deformity when present. Varieties and causation. Symptoms of the flexible and rigid groups. Prognosis and treatment. Discussion of plates and dangers of their prolonged use in some cases. Description of proper footwear.

CONGENITAL CYSTS ABOUT THE NECK.

William Senger, M.D., Pueblo.

Embryology as the factor in their production. Symptoms. Differential diagnosis. Dangers. Treatment: By aspiration, marsupialization, radical incision.

ANAEMIA—THE DOMINANT CONSTITUTIONAL DISORDER OF COLORADO.

Henry Sewall, M.D., Denver.

Description of the proper method of using the Tallquist color scale. Haemoglobin per cent more important than red blood count. Anaemia the result of deficient Hb formation or increased destruction or both. The normal stimulating effect of high altitudes on blood formation. The frequent lack of response of the organism to this stimulus and its clinical effects.

THE EFFECTS OF DISEASES OF THE GENITAL ORGANS ON THE URINARY ORGANS OF THE FEMALE; WITH ILLUSTRATIONS AND LANTERN SLIDES.

A. C. Stokes, M.D., Omaha, Nebraska.

Discusses the effects of uterine displacements, growths and inflammations on the kidney, ureter and bladder. Attempts to show that hydronephrosis and perinephric abscesses can oftentimes be traced to disturbances in the female organs and conversely many diseases affecting the kidney, ureter and bladder are unjustly laid at the door of the genital organs. Report of ten illustrative cases.

SHOULD THE PHYSICIAN BE PERMITTED TO DISPENSE HIS OWN MEDICINES?

E. Stuver, M.S., M.D., PH.D., Fort Collins.

Dispensing an ancient and inherent right of the physician. Former and present relations of Druggist to Physician. Recent efforts of N. A. R. D. to restrict physicians in dispensing. The physician should qualify himself for dispensing. The effect of dispensing:

(a) On the physician himself: Improved knowledge. Closer observation. Protects against unauthorized refilling. From poor people he receives a slight remuneration which would all go to the drug store. He is more certain of securing trustworthy medicines.

(b) On the patient: More prompt relief and quicker recovery. Saved inconvenience and expense. More careful and systematic treatment. Guarded against pernicious habit of self-drugging, or dangerous counter prescribing of druggist.

(c) On Society: Dispensing by the physician would greatly restrict the use of patent medicines, which are largely made up of alcoholic liquors or narcotic poisons. The use of morphine, cocaine and other habit-forming drugs would be greatly restricted.

ACUTE INTESTINAL OBSTRUCTION.

C. E. Tennant, M.D., F.A.C.S., Denver.

Recent statistics indicate a mortality of fully fifty per cent. attending operative interference in acute intestinal obstruction, and expectant non-operative treatment probably has a mortality of close to 100 per cent.

Author believes this frightful mortality under operative treatment due to the heroic measures to which the patient is usually subjected.

Two definite lesions attending acute intestinal obstruction. First: Primary obstruction, causing intestinal stasis and dilatation. As a sequence to dilatation, rotation of proximal end and twisting of mesenteric supply, inducing the second lesion: loss of vascular integrity of bowel, with gangrene and perforation.

Operation comparatively safe and simple until the vascular changes occur; after this bowel resection almost always imperative, with greatly increased hazard for patient.

During period between initial symptoms of acute obstruction and circulatory embarrassment, operation can be most successfully performed. The earlier the diagnosis and operation, the safer for the patient. Better, therefore, diagnose and even operate a few cases which later prove not to be obstruction, than submit patient to operation when chances for recovery are but fifty per cent.

FISH AND SHELL-FISH POISONING.

C. B. Van Zant, M.D., Denver.

Its wide distribution and importance. The nature of the poisons which cause it. Usually bacteria or their toxins. Varieties of causative bacteria in each form. Modes of contamination of fish. The nature of the bacterial toxins elaborated by the bacteria.

The effects of heat, canning, salting,

freezing and smoking upon the bacteria contained in fish and their toxins.

Four clinical types of fish and shell-fish poisoning. Illustrative cases. Prognosis. Treatment.

Original Articles

LUMBAR PUNCTURE, SEROLOGICAL, CYTOLOGICAL AND CHEMICAL FINDINGS IN ONE HUNDRED TEN CASES OF MENTAL DISEASE.*

C. W. THOMPSON, M.D.
PUEBLO, COLO.

The chemical and physical properties of the cerebro-spinal fluid, as well as its origin, have been studied in animals and man since Cotugno's time (1769). However, lumbar puncture first attained diagnostic importance in the hands of Quinke (1891), and modern serological, cytological and chemical investigation of the cerebro-spinal fluid has given us much information relative to the etiology of many pathological processes involving the cerebro-spinal tract, and has aided in the differentiation of nervous and mental diseases.

Quinke showed that the spinal canal and subdural space may readily be entered by means of a simple, straight needle, and he recommended that the puncture be made between the second and third or third and fourth lumbar vertebrae. The needle should be one millimeter in diameter and ten centimeters long, with sharply beveled point and a well fitting stylet.

The operation may be performed with the patient in a sitting posture, but with greater safety if he is in the lateral recumbent position with the body bent forward as much as possible, knees flexed upon the abdomen and with the lumbar region arched toward the physician.

A line drawn between the crests of the ilia will pass over the spinous process of the fourth lumbar vertebra and just above this point and slightly to the right or left of the median line the needle may be inserted, this point having been antiseptically prepared and frozen with ethylechlorid.

A general anesthetic may be necessary in children and in meningeal involvements accompanied by opisthotonos. The needle is pushed inward and slightly upward in adults; horizontally and toward the median line in children.

The presence of blood in the fluid vitiates the laboratory tests and the fluid should be allowed to drop in a sterile container.

Lumbar puncture is indicated in all forms of meningitis and in all syphilitic disorders of the cerebro-spinal tract, in neoplasms of the spinal cord, in poliomyelitis and in unclear conditions in which it is desirable to differentiate syphilitic from other conditions.

Normal cerebro-spinal fluid is colorless, odorless and limpid, with specific gravity slightly above 1,000, and with pressure of 60 to 100 millimeters of water, or from 5 to 7.5 millimeters of mercury. The reaction is slightly alkaline. Fehling's solution is reduced by normal fluid by a substance which is now regarded as sugar. This reduction is absent in the acute meningeal involvements but is present in the more chronic types of syphilitic involvement. Normally one to five lymphocytes may be found in each field, although some of the fields of this series showed no cells.

Investigation in the cases herein reported include the serological interpretation of the blood and cerebro-spinal fluid, together with cytological and chemical examinations of the cerebro-spinal fluid. The tests made use of are those having a well established value as aids in clinical diagnosis.

The protein content of normal cerebro-spinal fluid is very small and it occurs in

the form of serum-albumin and serum-globulin (Nonne and Apelt). Increased globulin content is typical of chronic syphilitic involvement, whereas increased serum-albumin content occurs in the more acute forms of meningeal involvement. Globulin increase was sought for by means of Nonne's test, Ross Jones' test and Noguchi's test.

In the cytological examination the Fuchs-Rosenthal method for the estimation of lymphocytes was used, the ordinary leucocyte pipette of Zeiss and the counting chamber of Thoma Zeiss being used. An increased lymphocyte count is an expression of an inflammatory process of the meninges, and the lymphocytosis directly proportionate to the inflammatory process.

Patients who are to be "lumbar punctured" should rest in bed for a few hours before the operation and from twenty-four to forty-eight hours following withdrawal of fluid. If the above suggestions are followed, the distressing symptoms, such as headache, nausea, vomiting and dizziness, will be materially alleviated and in many instances obviated.

Ordinarily not more than ten to twelve cubic centimeters should be withdrawn at one time, as dangerous collapse may occur if amounts greater than this are withdrawn. About a score of deaths have been attributed to the use of lumbar puncture, probably from hernia of the medulla into the foramen magnum.

Lumbar puncture was performed one hundred and seventy-eight times in this series of one hundred and ten cases, and in one instance a rather severe collapse followed withdrawal of a small amount of fluid in a case of chronic alcoholic hallucinosis. Some of the cases were punctured more than once to clear up doubtful cases, to check up former results, to observe effects of treatment, and in some cases of high pressure in paresis and epilepsy, fluid

was withdrawn at intervals during congestive attacks and seizures. A few cases punctured during the stuporous state accompanying or following the seizures of paresis gave fairly good results and the confusion and stupor cleared up rather more rapidly than usual.

In status epilepticus withdrawal of fluid is frequently indicated and the results gratifying when other indications have been met without beneficial results.

PARESIS.

The causal relationship of paresis to syphilis was maintained by Esmarch and Jessen as early as 1857, since which time there has been much difference of opinion as to the etiology of paresis. Careful investigation has revealed a very high percentage of syphilitic reaction and it is now generally conceded "No syphilis no paresis."

Noguchi, who has studied the brains of paretics in two hundred cases, has seen the *Treponema pallidum* in forty-eight cases, and he has seen the organism in one of twelve specimens of the spinal cord studied from cases of tabes dorsalis. It has been shown that about two per cent of those infected with syphilis develop paresis.

The neurological disturbances accompanying paresis give it its clinical characteristics. In this group pupillary disturbances were present in forty-four cases. The outline of the pupil was irregular in thirty-two cases. Irregularities in size were present in twenty-eight cases. Reaction to both direct and consensual light was absent in ten cases and slow in twenty-four cases. The patellar reflex was affected in forty-one cases, being over-active, under-active, or abolished.

The Romberg sign was present in nineteen cases, the Babinski sign in four cases and ankle clonus in seven cases.

Perversion of cutaneous sensibility was found in eighteen cases and in eight of these cases there was diminished sense of

pain. Disorders in speech consisting of stumbling, slurring, reduplication, slowing, scanning, paraphasia and aphasia were present in forty cases. Paretic seizures, apoplecticiform or epileptiform in type developed in seventeen cases.

General paresis was definitely or provisionally diagnosed in fifty cases of the series, the expansive, depressed, demented and agitated types being included as well as the irregular, hemiplegic and atypical types and unclear mental states.

The blood serum gave a positive Wassermann reaction in forty-eight cases, and the cerebro-spinal fluid gave positive Wassermann reaction in forty-six cases.

In some instances the original Wassermann method was used, in others the Wassermann method as modified by Noguchi, and in a number of cases both the original and modified methods were used.

In nearly every instance the pressure of the cerebro-spinal fluid was increased. A few cases showed slight turbidity of the fluid.

Globulin was in excess in forty-nine cases. Lymphocytosis varying from sixteen to seventy-nine cells per cubic millimeter was present in forty-eight cases.

One case of undoubted paresis gave a negative Wassermann in blood and fluid, cytological findings in this case being positive.

NONNE'S FORMULA IN PARESIS.

Pressure of spinal fluid frequently increased.

Wassermann (blood) positive in nearly 100 per cent.

Globulin reaction positive in 95 to 100 per cent.

Lymphocytosis present in 95 per cent.

Wassermann (spinal fluid):

(a) Original method 2 c.c. of fluid positive in 85 to 90 per cent.

(b) With increasing amounts positive in nearly 100 per cent.

In paresis a negative Wassermann in the

blood is exceptional. In a series of two thousand cases from the literature, 90 per cent were positive. In this series 96 per cent were positive in the blood serum and 92 per cent in the cerebro-spinal fluid. In a series of one thousand seventy-six recorded cases 81 per cent were positive in the cerebro-spinal fluid.

CEREBRAL SYPHILIS.

Cerebral syphilis was diagnosed in six cases, all males, in all of which the neurologic and psychotic symptoms were rather varied and inconstant. In one instance the time of infection was given as four years before admission to the hospital, and in this case onset of the mental symptoms was slow. In the other cases the time of infection varied from five to twenty years before entrance to the hospital, and in most instances the mental symptoms developed rather rapidly. In all of these cases the patellar reflexes showed some disturbance, and two cases gave the Romberg sign. Pupillary disturbances were marked in five cases. Two cases showed marked bilateral optic atrophy.

The Wassermann reaction was positive in the blood in five cases and in the cerebro-spinal fluid in three cases. Marked lymphocytosis was present in four cases. The cell counts varied from sixty to two hundred ninety.

Globulin was in excess in five cases. The case giving a negative serology was positive in the cytologic phase and the Noguchi butyric acid test was positive.

In one hundred forty reported cases of cerebro-spinal syphilis 80 per cent gave positive Wassermann reaction in the blood serum and 30 per cent gave positive Wassermann reaction in the cerebro-spinal fluid. In our cases 83 per cent gave positive Wassermann reaction in the blood serum and 50 per cent gave positive Wassermann in the cerebro-spinal fluid.

BRAIN TUMOR.

Case 1. Cerebellar tumor. Male. Age

19. Austrian. Venereal infection denied. Family history negative. Came under observation about six weeks, following a subtemporal decompressive trephining, which was done for the relief of severe symptoms of intra-erianial pressure. Relief was of short duration and after a few weeks he grew much worse. Headache became constant and severe, with pain most intense in the occipital region. Vomiting was a fairly constant symptom. No localized areas of tenderness could be elicited. The head was held in over extension. Vertigo was constant. There was some exophthalmus, photophobia, and impaired vision and hearing. Optic neuritis was marked. Pupils were equal, dilated and regular in outline; slow to direct light. Station and co-ordination were very greatly impaired and the patient could walk only when assisted. Speech was somewhat thickened. Mentally he was dull and the consciousness was clouded.

Lumbar puncture revealed high pressure and clear fluid. The Wassermann reaction was strongly positive, both in the blood and spinal fluid. Globulin was in excess. Cells six. The case progressed rather rapidly, was removed to the southern part of state by friends and the outcome of the case cannot be reported.

Case II. Cerebral tumor. American. Male, Thirty-two years of age. Family history negative, except that father died of apoplexy at fifty-five. First complained of headache and after two months the gait became slightly unsteady. Came under observation ten months after first symptoms developed. At this time static ataxia was fairly well marked. No paralysis. The sensation tests elicited hyperesthesia to painful stimuli (pin prick). No localized areas of tenderness over the head, but slight general tenderness was present. Patellar reflexes were slightly over-active. Ankle elonus and Babinski negative. Abdominal, cremaster and plantar reflexes

prompt. Cranial nerves were not involved except that there was a primary optic atrophy (bilateral) and vision was slightly defective in both eyes.

No speech defects elicited. The pupils responded quite promptly to light, both direct and consensual, and to accommodation, and they were regular in outline and equal.

Vomiting was slight and vertigo was inconstant. Mentally the patient was rather simple and childlike in manner, but was not actively hallucinated nor delusional. He was poorly orientated for time and place and there was considerable memory disturbance.

The cerebro-spinal fluid showed marked increase of pressure and the albumin content was increased. Noguehi butyric acid reaction was positive. The Wassermann reaction was negative, both in the fluid and blood serum. Ten cells per cubic millimeter.

In a series of twenty-five cases of brain tumor reported by four different investigators, the Wassermann reaction was negative in the blood serum and spinal fluid in all cases.

ARTERIOSCLEROTIC INSANITY.

In five cases of cerebral arteriosclerosis associated with mental disorder, two cases gave positive Wassermann reaction in the blood serum. The findings in the cerebro-spinal fluid were negative. The blood pressure in these cases varied from one hundred ninety to two hundred thirty-eight, and three cases were associated with organic heart disease (valvular), one with marked cardiac hypertrophy, and in three instances chronic nephritis was present. Two cases came to autopsy and showed marked arteriosclerosis, particularly of the cerebral cortex, and it was noticed that the general arteriosclerosis was not proportionate to that found in the brain.

MANIC-DEPRESSIVE INSANITY.

In the maniacal depressive group, ten cases were investigated, including the ma-

niaeal, depressed and mixed phases. Two of these cases gave positive Wassermann in the blood serum. The cerebro-spinal fluid was negative serologically, cytologically and chemically in every case.

One case (depressed phase) giving positive Wassermann in the blood serum, suffered from aneurysm of the aortic arch, which was undoubtedly specific in its etiology.

EPILEPTIC INSANITY.

Eleven cases of epileptic dementia were investigated. Three males gave a positive Wassermann reaction in the blood serum, and one of these cases gave a mildly positive complement fixation in the cerebro-spinal fluid. Aside from this the findings in the fluids were negative.

In each of the three cases showing positive Wassermann reaction in the blood serum infection was subsequent to the onset of epilepsy.

ALCOHOLIC INSANITY.

Alcoholic insanity was represented by nine cases, including Korsakoff's psychosis, delirium tremens, acute and chronic alcoholic hallucinosis and alcoholic paranoia. One case of acute hallucinosis in whom no history of syphilis could be elicited, but who suffered from diabetes mellitus, gave a positive Wassermann in the blood. Two other cases gave positive Wassermann in the blood serum, and all gave negative findings in the cerebro-spinal fluid.

DEMENTIA PRAECOX.

Twelve cases of dementia praecox were examined, including the catatonic, hebephrenic and paranoid types. Seven of these cases had led very dissipated lives before the mental symptoms were recognized and all of these gave a positive Wassermann reaction in the blood. The cerebro-spinal fluid was negative in the twelve cases.

One case of catatonic excitement developed tubercular meningitis, and this case

was lumbar punctured several times. The distressing symptoms were usually greatly relieved by withdrawal of fluid in amounts varying from thirty to forty-five cubic centimeters. In this case the lymphocytosis varied from fifty to two hundred and forty cells per cubic millimeter. Tubercle bacilli were demonstrated in the fluid and globulin was in excess.

In one hundred thirty-one cases of dementia praecox reported by Noguchi, fifteen gave positive Wassermann in the blood and three from a series of eighty-three cases gave positive Wassermann in the cerebro-spinal fluid.

The remaining psychoses of this series include one case each of involution melancholia, psychasthenia, hysterical insanity, senile dementia and traumatic dementia. The findings in the five cases were negative, both in the blood and cerebro-spinal fluid.

CONCLUSIONS.

The information derived from careful examination of the cerebro-spinal fluid has demonstrated the great importance of this procedure in neurology and psychiatry, particularly in the cases which seem to have an organic basis and in syphilitic involvements of the cerebro-spinal tract. The blood and spinal fluid should be examined at the same time, as a blood examination alone gives no information as to involvement or non-involvement of the cerebro-spinal tract.

Absence of the Wassermann reaction, of a lymphocytosis and of the globulin reaction means absence of syphilitic involvement of the tract. In the early stages of paresis or the pre-paretic stage, a lymphocytosis is frequently found and will serve to differentiate paresis from neurasthenia, etc. The early recognition of paresis is of tremendous importance, both to the patient, his family and the public.

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DISCUSSION.

O. M. Gilbert, Boulder: Speaking from the standpoint of the internist and general practitioner I should like to say a word as to some of the simpler examinations of spinal fluid. By way of illustration I will quote three cases which I have seen somewhat recently—two with Dr. Walker of Marshall.

The first case was one which had gastrointestinal symptoms for a few days and then was seized with very definite meningeal symptoms. We made a lumbar puncture, and got a distinctly turbid fluid. Now, according to the advice of Flexner and his followers, that is a sufficient indication for the administration of the Flexner serum, without waiting for the cytological or bacteriological diagnosis. We proceeded to get the serum as quickly as possible, but the germ proved to be pneumococcus, so of course there was no benefit from administration of the serum. However the aspiration of the fluid a couple of times afterwards did give considerable relief.

Shortly afterward I saw a very similar case with Dr. Griffin. Aspiration of the fluid showed it to be distinctly turbid. Flexner's serum was immediately given. Following it up we again found the pneumococcus.

The second case of Dr. Walker's was a neighbor and cousin of the first case, which died of pneumococcal meningitis. The beginning was a case of "green apples." Dr. Walker found apparently only an ordinary case of gastro-intestinal disturbance, but within an hour the child was seized with serious convulsions. When I saw the child about three hours later it had not rallied from its convulsions. It was absolutely comatose, had exaggerated deep reflexes, and almost no pupillary reaction. The deep coma became intensified, and shortly after I left the child died. Unfortunately at that time we were not prepared to make the puncture.

Now with those other cases having died of meningitis, and another case springing up there which had been in close contact with one of them, our suspicions would naturally be aroused as to the possibility of this being epidemic meningitis. So we saw the importance of at least doing a lumbar puncture, since we could not get a post mortem. The doctor went over and aspirated the spinal fluid after death, got a very distinctly bloody fluid, which, upon settling formed a fairly definite clot at the bottom, and the fluid itself, even after being centrifugated remained deeply colored by the hemoglobin from the dissolved red blood

corpuscles in the presence of so much blood, and no disproportion of leucocytes, and it being negative bacteriologically, we felt justified in pronouncing it a case of subdural intraventricular hemorrhage, as a result of convulsions due to green apples. Consequently the minds of the parents as well as our own were relieved of anxiety as to danger to the other children.

Philip Hillkowitz, Denver: It may be of interest to add that the final proof of what was previously only a suspicion that paresis is but another phase of syphilis has been produced. Dr. Thompson has alluded to the fact of Noguchi finding the *treponema pallidum* in the brains of paretics. Very recently, a report comes from one of the German institutes for the insane that they have succeeded in inoculating the microorganism found in the brains of paretics into the testicles of rabbits and producing the characteristic lesions of syphilis. In order to do this they resorted to the rather heroic measure of cutting out a cylinder of brain substance with an instrument devised for the purpose. Thus by finding the microorganism in every case of the disease, by Noguchi's successful cultivation of the spirochete in artificial media, and by the successful inoculation of the spirochete from paretics into animals, the postulates of Koch have been fully satisfied and the cause of lues indubitably established.

William C. Mitchell: I just wish to say in reference to the finding of live spirochetes in the brains of paretics that the method was first tried in the clinic of Tomaszewski, in Berlin. The method is to drill right through the frontal bone, and then with a very fine syringe take a little plug of the brain out; which is certainly a very heroic measure. In that way they demonstrate the spirochete almost immediately by placing this secretion under the microscope, and thus obviate the longer method of examination of the spinal fluid with the Wassermann. Living spirochaetæ pallidæ have also been demonstrated in the spinal fluid book by Hoffman and by Nicholls & Haugh, and by the latter observers in an early case of secondary lues. From a neurological standpoint, these new biological discoveries must be of great moment as indicating early and heroic treatment.



Boulderado Hotel, Boulder, Colorado.

ECLAMPSIA, WITH SPECIAL REFERENCE TO ITS ETIOLOGY AND TREATMENT.*

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In the absence of positive knowledge, it is only natural that many and varied are the theories advanced concerning the nature and cause of eclampsia. And while the problem remains still unsolved, yet the continued advancement of new theories indicates that its importance has not been lost sight of by modern investigators.

The original theory of kidney insufficiency has been superseded by others, from the fact that post-mortem, many other organs, including the spleen, thyroids, liver, brain, etc., have been shown to be affected in the pathologic processes.

On this basis, many believe that the eclampsia is simply the result of other pathologic conditions culminating in the final outbreak.

This has led some writers to discuss eclampsia under the general heading of the Toxemias of Pregnancy.

On the other hand, Davis and Foulkrod¹, in a recent article, have attempted to show that eclampsia is a distinct disease per se.

In recent years many interesting theories have been advanced.

In 1904 Zweifel² and later others³ found that in the urine of eclamptic patients the urea nitrogen is persistently lowered, while the ammonia nitrogen is usually above normal, although it may be low. But as a constant factor, the undetermined nitrogen is high, taking up much of the urea content. This indicates a deficient changing of ammonia and amino-acids into urea.

This theory is strongly urged by Williams in his text-book.

Kiutsi⁴, in 1912, advanced the theory that eclampsia is the clinical manifestation

of a sudden and extreme poisoning of the system, by an excessive number of *syncytium nuclei* getting into the blood at one time. (The syncytium is a layer of protoplasm which surrounds the chorionic villi, and is full of large nuclei.)

In 1910 Thies⁵ experimented with rabbits, on the theory that eclampsia is a kind of *anaphylaxis* induced by alien albuminous substances in the serum of the fetus. However, he obtained the same effects, though in lesser degree, in the non-gravid animals.

Murray's⁶ experiments with autolyzed liver, and amniotic fluid, seem to prove that it is not anaphylactic in nature. Guinea pigs injected with autolyzed liver gave a positive anaphylaxis, while those treated with placental and amniotic fluid gave no reaction.

Dienst⁷, in 1911, advanced the theory that eclampsia is due to injury resulting from the *accumulation of fibrin ferment* from destruction of *polynuclear leukocytes* used up in the pregnancy. The fibrin ferment, or thrombin, accumulates in the liver, and produces a congestion in this organ, and it is no longer able to produce the necessary anti-thrombin in sufficient amounts. The mechanical hindrance to the circulation in the vena cava from pressure of the uterus prevents the fibrin ferment from getting into the blood as under ordinary conditions, and thus coming in contact with the anti-thrombin. Then the thrombin accumulated in the lower portion of the body is suddenly turned loose when labor commences, and the blood is overwhelmed with it.

In opposition to this theory we have the experiments of Heynemann⁸, who reports his chemical research on the liver functioning and creatinin metabolism during pregnancy, and states that he found nothing to suggest any special typical injury to the liver from the existence of pregnancy, and nothing to suggest that the liver is espe-

cially involved in the production of eclampsia. Landsberg⁹ practically confirms this conclusion.

Jarzew¹⁰, in 1911, explained eclampsia as the result of a thickening of the blood from the *accumulation of globulins*, due to the abrupt cessation of the functioning of the placenta, and thus cessation of the consumption of the albumin in the blood. He then goes on to elucidate his theory, on the basis of what is really *mechanical pressure*. The stagnation of the thick blood increases the pressure in the arteries, until the vasomotor center feels the influence of it, and induces spasmodic contraction of the arteries with resulting ischemia.

Whatever the underlying cause may be, we cannot help feeling that he has come pretty close to the right explanation of the mechanism of an eclamptic attack; that in some way the centers in the brain are so affected by altered blood as to produce hyper-excitability.

Following up a somewhat similar hypothesis, Zangmeister¹¹, in 1912, trephined and found *intracranial pressure*, which being relieved the patients recovered.

Of interest as being in *direct analogy* with Zangmeister's theory is the report this year by Croom¹² of two cases of tuberculous meningitis, exactly simulating puerperal eclampsia.

Of a quite different aspect are the theories of Sellheim¹³, that the *mammary gland* is the source of an intoxication which produces the eclampsia; and of Healy and Kastle¹⁴, that eclampsia is due to a toxin similar to that of *milk fever in cattle*, elaborated by the breast in a similar manner; while Persson¹⁵ presents a number of arguments to sustain his theory that the eclampsia of pregnancy and puerperal paresis in cows are both due to the same cause, namely, *retention of the substances* which are intended for the nourishment of the fetus. Disturbances are liable to occur, whenever there is a disproportion in

the supply of the nourishing substances for the fetus, and the capacity of the fetus to use them, or, after delivery, incomplete elimination of these substances through the mammary glands. His treatment is stimulation of the production of outflow of milk; anything increasing the viscosity of the blood should be avoided, while potassium iodide, by rendering the blood more fluid, has a very favorable action, so much so that he regards it as almost specific in eclampsia. He reports several cases in which headache, restlessness and other symptoms, with pregnancy kidney, warned of impending danger, which he then warded off by the use of potassium iodide.

Mitchell¹⁶ claims that potassium salts are not only not beneficial, but that they are harmful. He¹⁶ advanced a new theory in 1910, in which he asserts that the intoxication is due to altered metabolism due to a deficiency of *calcium salts*, basing his belief upon experiments and comparisons with epilepsy and tetany. Recent reports concerning the lack of calcium salts in tetany of the newborn seem to bolster up this theory. Kehrer¹⁷ reports six cases of tetany in the newborn, treated by calcium salts, in which all but one recovered. Mitchell¹⁶ also reports a case of actual eclampsia in the sixth month of gestation, which was controlled by the administration of calcium lactate.

These reports seem to suggest that it is the chemical condition of the blood which is affected by whatever the agency may be that produces the mal-metabolism.

Of a still different nature are the suggestions made by Schlichting¹⁸ and Fraser¹⁹.

Schlichting¹⁸, in 1909, collected the statistics of 262 cases in Berlin, covering a period of four years, which, compared with the weather chart, showed its occurrence most commonly in humid weather; while two years later Fraser¹⁹ noticed the same

coincidence in India, and thought the decreased output from the sweat glands might be the cause.

From the foregoing we may make the following deductions:

a. The underlying cause is primarily the pregnancy;

b. The eclampsia attack is produced by some toxin, or toxins, circulating in the blood, due to deficient chemical changes in the production of urea, or other chemical changes, and abnormal protein metabolism, combined with insufficient elimination through kidneys, breasts, bowels, liver, skin, etc., all of which reacts upon the brain centers in such a manner as to produce the eclamptic outburst.

While scientific researches are being carried on by those in position to make them, yet it is as incumbent upon us as heretofore to keep watchful care of patients, and endeavor to ward off this complication of what should be a physiological condition.

The laity should be educated to the point where every pregnant woman would feel it her duty to immediately place herself under the care of a physician.

The important thing remaining for us is:

a. To detect danger signals in pregnant women;

b. What to do from a prophylactic standpoint;

c. When danger seems imminent, what measures to pursue first;

d. How long to wait before more radical procedures are inaugurated.

The symptoms of suspicion are: Headache, constipation, pains in epigastrium, nausea and vomiting continued unduly long, restlessness, dizziness, somnolence, disturbance of vision, etc. Albuminuria may or may not be present, as recent experiences have proven that convulsions may occur, even though examination of the urine immediately prior to the occurrence has shown absence of albumin and casts.

One of the most important indices now at our command is the condition of the blood pressure. After careful experiments, covering a period of five years, Starling²⁰ is convinced that during the whole period of normal pregnancy the blood pressure is normal, and any rise above 125 mm. Hg. would make him suspect that the pregnancy was not quite normal, and would put him on the lookout for some degree of toxemia.

The prophylaxis consists in watchful care of pregnant patients.

At the first sign of any of the above symptoms, the patient should be required to keep absolute quiet of both body and mind in bed for at least a week or two, on milk diet, with large quantities of water, the bowels thoroughly cleansed, and the kidneys and skin kept active.

A survey of the many methods formerly used in treatment shows a quite constant empirical effort toward the same end, viz, a relief of high blood pressure and elimination of the poisons.

The same object may sometimes be obtained by very different means, and in those instances where the drugs used have apparently proven successful, they may have been so simply because the desired effect was obtained in conjunction with the reduction of the blood pressure by hemorrhage consequent upon the removal of the fetus.

The drugs commonly used range from bowel, kidney and skin eliminants, such as Rochelle and Epsom salts, potassium citrate and acetate, niter and pilocarpin, up to those which are supposed to control the convulsive attacks proper, viz., chloral, morphin, veratrum, chloroform, etc.

But the fact remains that the underlying cause is always the presence of the fetus in utero, and this brings us to the question of judgment as to the time and means of delivery.

If under the regime above outlined the

patient's condition is not favorable to a safe outcome, the question of the best means of terminating the pregnancy should be carefully considered. Nor should we wait until the appearance of convulsions, as the recent experiences of Schmid²¹ and Gottschalk²² show that eclampsia undoubtedly does occur in some instances without the convulsions.

Before viability of the fetus more time for consideration may be consumed, provided the mother's condition is not immediately dangerous.

The induction of premature labor should be accomplished by that means, which will relieve the uterus of its burden in the least possible time, with the least possible irritation of the maternal nervous system.

In multiparae usually the slow method of introduction of a catheter outside of the membranes will suffice to bring on labor, or rupture of the membranes followed by metrecrystis may be done.

In primiparae it is advisable to soften the cervix by packing with gauze for twenty-four hours or longer, and follow with the use of the hydraulic bags. In the more urgent cases, resort should be had to immediate anesthesia, with radical surgical procedures, either incisions of the cervix or vaginal Caesarian section.

After viability, in patients who do not react favorably to a proper hygienic and dietetic regime, and whose urine shows a constant decrease of urea excretion, with tendency towards increase of albumin, and especially should there be other untoward symptoms, such as headaches, twitchings, or flashes before the eyes, experience seems to teach that the earlier the uterus is emptied the better the chances for both mother and child.

In multiparae this may be accomplished by (a) rapid delivery if easy, (b) accouchement forcé under anesthesia, or (c) if necessary Caesarian section.

In primiparae the surest method for

mother and child, at or near term, is Caesarian section under ether. No morphin should be given, as the child's chances for resuscitation are greatly lessened by its use.

Convulsions occurring post-partum are quickest controlled by venesection, followed by saline infusion, and voluminous flushing of the bowels with warm salt solution.

Metropolitan Building.

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DISCUSSION OPENED.

August Freudenthal, Trinidad: I can only repeat what Doctor Ferris has said with reference to the use of veratrum. It is a most excellent preparation. But with reference to

dietetic regulation, in limiting the diet to milk, I think very much better results can be obtained, as far as my personal experience is concerned, by the addition of lime water to the milk in cases of this type. The reason is this, that the pure milk diet causes the production of great quantities of phosphoric acid, which acts as a very powerful irritant. This can be very readily overcome by the addition of a certain amount of lime water.

Philip Hillkowitz, Denver: The paper preceding this one had eye lesions as its theme, which seems quite a long step to puerperal eclampsia. But in this arrangement the committee on program perhaps builded better than they knew, for the etiology of both conditions seems to be referable to errors in metabolism. In a discussion of that paper I touched briefly on the work that has been done by Abderhalden and his school on the complex process of metabolism and on the bearing this has on our altered viewpoint of disease. With your permission I will try to explain this at greater length.

Most of the foreign bodies that enter the organism do so through the gastro-intestinal tract, which is provided with a series of glands that manufacture certain enzymes. These enzymes, acting on the proteids, fats and sugars, have the capacity of splitting them into simple substances. Supposing, however, that a foreign body is introduced in any other way than by the gastro-intestinal canal, say, subcutaneously or intravenously, what happens? The organism is not accustomed to take care of a foreign body, thus introduced parenterally, but it immediately adapts itself to render the invader harmless. There are no enzymes in the blood, for instance, to split up sugar, but if you inject sugar intravenously, within a few hours there will be evident the presence in the blood of an enzyme which can split up that sugar; the same is true of proteids and fats. Based on this fact a test has been devised, for instance, for detecting pregnancy.

In pregnancy certain foreign substances derived from the placenta are introduced into the blood. Normal blood, i. e., of the non-pregnant woman, does not contain any enzyme which can split up the albumens of a placenta, but in the pregnant woman there is such an enzyme. In carrying out the test we take a piece of placenta and let the serum of the patient act on it. In a dialyzer we then test the dialyzate with a special reagent for peptones which are formed if the serum possesses ferments that can split placenta albumen.

G. A. Boyd, Colorado Springs: I feel that perhaps I should report some experiences I have had in the last year in a case of eclampsia in a young woman of 17. She began to show albumen in her urine in the seventh month, and rapidly grew worse in spite of all we could do, till about the latter part of the eighth month she gave evidences of approaching eclampsia. We took her to the hospital and I packed the uterus, but before we succeeded in inducing labor the eclampsia set in. We had already made arrangements to do Caesarean section in case convulsions came on be-

foredilatation took place. This we did with good results to both. On that same day Doctor Mayhew had a similar case at the same hospital. That same night, at St. Francis' hospital, if I remember rightly, Doctor McKinnie had a similar case, occurring much earlier in pregnancy; I think about the fourth or fifth month. In this case, of course, the child was lost, but the mother was saved. All three of the patients are alive. Doctor Mayhew's baby is alive, and so is mine. My patient continued to have convulsions afterwards, and I did a venesection, using the Murphy method in the bowel, and removing blood until the convulsions stopped. She made a good recovery.

I have seen two babies delivered during eclampsia, and both of them have had convulsive seizures, but both of them have been relieved. In my case on the fourth day I put the baby to the mother's breast, and within two hours he was having convulsive seizures. I happened to have another patient there, and changed the baby and put it on her breast, and the trouble immediately cleared up.

Doctor Moses, Colorado Springs: I only wish to say a word regarding the toxic origin of eclampsia originating in the mammary gland. A couple of years ago in the Vienna clinics they were trying out a method of blocking off the mammary gland by the injection of oxygen beneath the gland. There were six cases so treated, some of which were in active convulsions. In all the eclamptic manifestations disappeared promptly, and it was unnecessary to induce labor in any of these cases. In only one case was it necessary to reinject the oxygen a few days later, owing to a recurrence of the symptoms.

I am not prepared to say what the more recent findings with this method proved to be, but in those cases observed the results were very satisfactory indeed.

Charles A. Ferris, Denver: This subject is interesting on account of its varied aspects; with so many different methods of causation and so many methods of treatment, some of which are successful with some cases, and not with others.

Doctor Freudenthal has mentioned the use of lime water in connection with milk in the treatment of early cases. I have used this treatment also, and it immediately occurred to me that it is in accord with Mitchell's theory mentioned in my paper in regard to the deficiency of calcium salts.

Bacteriologic Standards for Milk.—A great many cities of the United States, with a total population of over 21,000,000, now require that milk offered for sale shall not contain more than a specified number of bacteria to the cubic centimeter. The United States Public Health Department has recently published a list of cities with populations over 10,000 in which this practice is in force. None of the cities of Colorado appears in this list. We wonder why!

TREATMENT OF PUERPERAL INFECTION.

BY A. R. POLLOCK, M.D.
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Puerperal infection is a subject worthy of discussion for two reasons.

First. It is a disease claiming eighty thousand¹ lives annually in the U. S. alone.

Second. While the profession is a unit as to the treatment of most surgical conditions, its members differ radically in their treatment of puerperal infection.

By puerperal infection, I mean, any infection of the genital tract of the puerperal woman. This infection may be local or general, or of any degree of severity.

The complicated nomenclature employed to describe the exact location of the infection, from an anatomical basis, though possibly necessary for the sake of accuracy in description, conveys very little information as to the real condition of the patient; e. g. to say that a woman suffering from puerperal infection has an endometritis or a cervicitis means little, but to say that she has a sapremia or septicemia or more accurately a toxinemia or a bacteremia is more enlightening as to her condition.

Treatment may be divided into prophylaxis, local, general, specific and surgical treatment.

Prophylaxis. By prophylaxis most can be done for puerperal infection. The prophylaxis is so important and the treatment so insignificant relatively that any consideration of the subject which failed to emphasize the prophylaxis would be lacking in proportion.

Every obstetrical case should be considered a surgical operation and should be conducted under surgical antisepsis and

asepsis. Few examinations should be made, external examinations should be practiced to the exclusion of internal in many cases, the environment of the obstetric case should be investigated, the obstetrician like the surgeon should keep himself free from contamination by infectious or septic diseases. In brief the same preparation should be observed for the conduct of an obstetrical case as for a surgical case.

In the conduct of the third stage of labor care should be taken that all of the placenta be removed. Better insert the hand and remove retained placenta than to leave it, though this procedure should seldom be required.

In abortion cases where there is retention of ovular remains, better remove early by means of the finger, placenta forceps or large curette, than to court infection by delay.

While under the head of prophylaxis another phase of this question should be mentioned and that is the occurrence of auto-infection. Despite all our care not to introduce infection from without there are undoubtedly cases of infection arising from within—auto-infection.

Walton and Medalia² in a recently conducted bacteriological study of 103 cases find that: "The streptococci both hemolytic and non-hemolytic are present in the parturient canal during pregnancy, before any digital examination has been made." They also conclude that: "Auto-Infection plays an equal rôle with exogenous infection as to frequency of sepsis, but not as to its severity.

Local Treatment. It is in the local treatment, in the presence of infection that the profession is divided into two classes, radicals and conservatives. A committee was appointed at the 1912 session

¹De Lee: Principles and Practice of Obstetrics.

²"Hemolytic Streptococci and Puerperal Septicemia," Surg. Gyn. & Obs., Vol. XV, No. 6.

of the A. M. A., of which Prof. De Lee of Chicago was chairman, to investigate the practice of the profession of this country as to whether they attempted to empty the uterus in the presence of infection. This committee made its report last June at the Minneapolis session in the section of obstetrics, gynecology and abdominal surgery. The majority of all physicians answering the questions sent to them, reported in favor of removing ovular remains in the presence of infection, though practically no one advised the use of the eurette in this condition. Favorite methods were: packing, use of the finger and of the placenta forceps.

Prof. De Lee headed a considerable minority report in favor of absolutely no interference locally except for one indication, viz.: hemorrhage, and then packing was advised.

When dealing with a case, say of abortion of three months gestation, in which the retention of ovular remains is known or suspected and where fever is present, the question which confronts the attending physician is this: is the condition here present a local or a general one? Is it a toxemia or a bacteremia? If this question could be answered positively pro or con the indications would be clear. If a local infection only were present, a toxemia, a careful removal of the uterine contents would be indicated. On the other hand if a bacteremia were present, any local interference would be strongly contraindicated, for any manipulations used in removing the uterine contents would traumatize the uterine wall, thus opening up fresh surface for the entrance of virulent bacteria. However, it may be said without fear of successful contradiction that in the case cited above, to know at the time whether a toxemia only or a bacteremia be present is impossible. Therefore the uncertainty of indications for or against local interference. The ma-

jority of puerperal infections are toxemic the minority bacteremic. Disaster follows local interference in cases of bacteremia, especially in those cases of streptococcic bacteremia.

A course of non-interference locally in the cases of toxemia will result in recovery, while it is the only safe treatment in cases of bacteremia. Therefore the logical conclusion is that non-interference locally is the proper treatment. This is my practice. Here is the time and place for the practice of that much talked of "masterly inactivity."

General Treatment. Although the most important sub-division of the treatment in puerperal infection, may be passed over quickly as there is very little difference of opinion as to its conduct, a large airy room, quiet tactful nurse, plenty of nourishing and assimilable food, attention to excretion and when indicated the exaggerated Fowler position with Murphy proctoclysis are among the most important factors.

Specific Treatment. Up to the present time, the use of serums and vaccines in this disease has proven quite disappointing. This is not to say that their use has been productive of no good. The future may show better results with specific treatment.

Surgical treatment should be restricted to definite indications. Hysterectomy is not to be recommended. When the apparent necessity arises for so serious a procedure, the disease is already too far advanced to be arrested by hysterectomy. Fifteen minutes may suffice for the development of what may prove a fatal bacteremia. The value of ligation or excision of the pelvic veins in puerperal thrombophlebitis is as yet an unsettled question. This is well shown by two recent contributions, one by Dr. Jellett³

³"The Surgical Treatment of Pelvic Thrombophlebitis," *Surg. Gyn. & Obs.*, Vol. XVII, No. 2.

of Rotunda Hospital advocating the operation and one by Dr. Findley⁴, Omaha, condemning the procedure.

When local accumulations of pus develop they should be opened and drained preferably by the extraperitoneal route.

DISCUSSION.

W. W. Grant, Denver: This subject is old, and yet always new. No one questions the necessity and propriety of every obstetrician, physician or surgeon using every measure of preventive medicine in his attendance upon these cases. Formerly I did a good deal of obstetric work; of late years I treat these cases, mostly, surgically, and for the sequels of the confinement. I believe any physician or surgeon is derelict in his duty when it is manifest that the patient has chills and fever if he does not thoroughly explore the uterus, not with a sharp curette, but generally with the fingers or smooth instruments, in order to ascertain whether or not the cause is within the uterus, some debris in the form of membrane or placenta or clots that are decomposing and producing the trouble. It is mere guesswork unless he makes this examination, and if he makes it and is prepared to clean out the uterus, gently, under irrigation, if necessary, ordinarily he will find the explanation of the difficulty within the uterus. The auto-infection may co-exist with, but is rarely the primitive cause of trouble, and under these conditions such treatment is preferable to a radical surgical procedure in the form of hysterectomy, which makes the result still more doubtful. But he should clean out the uterus, swab it out, if necessary, with carbolic acid and iodine, then with a little alcohol, and then let the uterus alone.

If this procedure is followed the mortality from puerperal septicemia would be exceedingly small. The continued interference with any case of this kind is invariably followed by a chill, a chill of great severity, but usually of short duration, extreme prostration, and a decreased temperature following quite rapidly after. Then if your patient is let alone, that is, practically let alone, I mean by local means, permitting nature to reassert itself, knowing that you have removed the focus of infection, the patient will generally get well, and convalescence, even under these conditions, very slightly prolonged.

Wilbur Lucas, Pueblo: I want to add a few words in regard to diagnosis of these cases. A great deal has been said about the treatment, and very little about diagnosis. I had a breech case some three months ago in which when I arrived at the house the child's shoulders were down on the perineum. I had to do a hasty delivery. The baby weighed nine pounds, a primipara. This was under circumstances where I had to go ahead and

do the best I could. I did not have time or opportunity for these preliminary cleanings that we all like to do in any obstetrical procedure. I delivered a living child the best I could. On the fourth day her temperature was 99½°. A little fever that caused suspicion, but not such as to discourage us greatly. On the fifth day I called and found the woman had a very severe chill. Her pulse was 120 and temperature 102½°. I began to get discouraged pretty fast then about that case. I forgot to add that in the delivery of the third stage the placenta was in a ragged condition, and I was not altogether satisfied with its appearance nor the conditions of delivery, although I did not feel justified in making an attempt to remove it at that time. I had consultation in the case and the consultant agreed that I ought to attempt to see if there was something in the uterus causing this trouble. We went through the operation, curetted, removing considerable placental tissue, and irrigated with 2% lysol solution. The patient did not improve. She continued to have high fever and chills, although a healthy, robust woman who had no fever before. On the seventh day she had a nosebleed and on the tenth day I got a positive Widal and had a straight case of typhoid fever. She recovered and is now again back at her home in Kansas.

Since there was some placental tissue removed, I am not sorry we curetted and removed it, although it might have passed away without the operation. We are apt to get frightened when any labor case develops fever chills and a rapid pulse and jump to the conclusion that it is the parturient tract that is causing the trouble, when a careful diagnosis might save us much worry from this standpoint.

F. N. Cochems, Salida: I do not do much obstetrical work any more, but at one time I did a fair amount. I come in contact now with cases, in consultation, where we have retained placenta or infection, and the question at once is, what is to be done, and in nearly every instance there is an anxiety that something should be done; generally the removal of the placenta is desired, not knowing whether it is sapraemia or septicemia. Many years ago Dr. Jaggard of Chicago formulated a preventative or prophylactic treatment of sepsis. He used to limit the number of vaginal examinations to the minimum, which means practically none. In my experience I found that if one had patience and did not make vaginal examinations, but followed the method known as the Pean method, very few vaginal examinations were necessary. I might have lost some cases with prolapsed cord, or some complications, but it always did seem to me that if I took time, had plenty of patience, did not get in a hurry to see the other case, but figured I must remain with the case until it was disposed of, I found I did better work. In those few cases where surgery was required, I found it an entirely different line. Where nothing was required, practically nothing was done. The work was on the outside, and we did not get sepsis. If the placenta were left alone more, it would

⁴"The Management of Puerperal Thrombophlebitis," Surg. Gyn. & Obs., Vol. XVII, No. 3.

be torn less. My experience has taught me that time, a few minutes, or thirty minutes, or an hour, in the absence of hemorrhage, was one of the best methods of expelling the placenta, and I never was guilty of going after the placenta, as has been mentioned by one of the speakers here, "going in after it." If I could not remove it after a reasonable time, getting it slowly loosened by the Crede method, I left it alone for nature to expel it. In the presence of severe hemorrhage, I would go after it above, but rarely from below. I believe that the placenta had better be left, in part or in whole, in the uterus, than to go after it in any way, in the absence of hemorrhage. Why? For this reason: We know or believe that the uterine cavity is clean. We know by the studies of many men lately, the last few years, that the vaginal tract contains different kinds of pathogenic germs, especially the streptococci. Twenty years ago it was thought that the lower two-thirds contained pathogenic germs, but that nature provided some method of cleansing and making aseptic the upper third. It seems now that the observers and students of this subject are finding the streptococcus and other pathogenic germs, of which the streptococcus, perhaps, is the worst, all the way up to the cervix, and why shouldn't they be? If the uterine cavity is clean and you attempt to go through the vulva and the vaginal tract, you are almost certain to carry germs, unless, as has been said, you sterilize the cervix. If you sterilize the cervix can you get a condition absolutely aseptic for operation in the vaginal tract? Just try it and find out. I do not believe it can be done. The danger, it seems to me, is in going after these cases too early, too much and too often. If a piece of the placenta is left, let it alone. A sharp curette does so much harm, and the dull curette is not worth anything, so why go in at all? My practice, where I am consulted in these cases, is not to do anything with them except what has been brought out. I consider Dr. Wetherill's method of alcohol irrigations an excellent one. I believe that it is very good. It is not so toxic as many of the other antiseptics, and you can study the patient and perhaps do some good. At least it seems so in our work.

TRANSPPOSITION OF THE UTERUS AND BLADDER FOR THE CURE OF EXTENSIVE RECTOCELE AND PROLAPSUS OF THE UTERUS.*

BY C. HERMAN GRAVES, M.D.
CANON CITY, COLO.

In presenting the operation of transposition, I am not introducing anything origi-

*Read at the Annual Meeting of the Colorado State Medical Society, Oct. 7, 8, 9, 1913.

inal with me, but simply trying to make better known what in my judgment is the best procedure for the cure of certain vexing conditions.

So far as I am aware, it cures cystocele and prolapsus in the great majority of cases. The operation I shall describe was originated by Thomas J. Watkins of Chicago in 1898, being developed by him from ideas gained from the Dührlein-Mackenrodt operation for vaginal fixation of the uterus. This operation fixed the uterus in the vaginal canal, but left it without a covering. The great majority of operations for the cure of prolapsus in the past have proved unsatisfactory. The old operation of amputating the cervix, repairing the perineum and narrowing the vaginal outlet, so as to hold the uterus inside, practically always failed. Suspending the uterus from the anterior abdominal wall in various ways also generally failed because of stretching of adhesions caused by the downward drag of the uterus. Where these operations did succeed in retaining the uterus, they frequently caused pain and nervous trouble.

Cystocele, which is really a hernia of the bladder, generally recurred because of the atrophy of the infravesical fascia. In attempting to repair this hernia on the same lines as any other hernia, it was found to be very difficult to obtain enough supporting tissue to repair the gap through which the bladder protruded. When operations for the cure of prolapsus failed the rectocele was sure to recur.

OPERATION.

The anterior lip of the cervix is grasped by a volsellum forceps, drawn downward, and a transverse incision made across the vagina at its anterior junction with the cervix.

The edges of the incision are caught at their outer angles and held taut, and a sharp-pointed, 6-inch scissors is intro-

duced closed, and pushed upward between the anterior vagina wall and the bladder, close up to the urethral body. The handles are now separated, and the scissors withdrawn. This generally gives sufficient separation of the vaginal wall from the bladder. There is little danger of injuring the bladder if the point of the scissors is kept in close contact with the vaginal wall as the scissors are pushed upward. The scissors, however, should not be too widely or roughly opened, as it is not necessary to have the separation of the vaginal wall and bladder very wide, and too much force might result in a tear of the bladder. The anterior vaginal wall is incised in the median line and the edges grasped with forceps.

Very wide separation is not advisable, as it endangers the ureters, causes unnecessary hemorrhage and gives more space for the accumulation of blood and secretion underneath the flaps when closed. The separation should just be sufficient to give flaps sufficiently large to cover the body of the uterus and allow for fairly wide surface contact of the edges without undue tension. Of course, when the cystocele is very extensive, the separation should be wider, and some of the redundant edges cut away. Still holding the cervix downward, the bladder is now dissected from the uterus by blunt dissection with the scissors.

The point of the scissors is pushed upward between the cervix and bladder, keeping close against the body of the uterus, finding and following the plane of fascia, advancing one-quarter to one-half inch at a time; then opening scissors and advancing again in the same manner until the peritoneum is reached. As long as any of the bladder wall remains attached, the tissues have a firm, resisting feeling. The peritoneum is recognized by its mobility and thinness. It pushes away from the scissors, and is not punctured by them.

A long, narrow retractor is now introduced, and the bladder lifted forward, thus exposing to sight the anterior wall of the uterus and the peritoneum. The peritoneum is caught with forceps, pulled down and incised; the opening may then be enlarged with two fingers; the anterior wall of the uterus is grasped with a single volsellum forceps and drawn downward and forward; at the same time the cervix is pushed upward and backward; then a second volsellum forceps grasps the anterior wall of the uterus higher up and nearer the fundus, and so on until the fundus itself can be grasped and delivered into the vaginal canal. At this stage of the operation the ovaries and tubes can be examined, and any necessary attention given them.

In one of my cases in which the operation was done to cure a large cystocele, the patient being an elderly lady, the uterus was difficult to deliver on account of an adherent cystic ovary. I succeeded in freeing the ovary and removing it, after which the rest of the operation was not difficult.

SUTURE OF THE UTERUS AND CLOSURE OF THE VAGINAL WOUND.

A catgut suture (I have used No. 2 catgut, chromicized) is set in the fundus a little posteriorly, in about the same manner as the highest stitch in Kelly's uterin suspension operation. This stitch fastens the fundus in the upper angle of the vaginal incision, just below the meatus. It should not be sutured close enough to the urethra to cause pressure on it, and not far enough away to allow recurrence of the cystocele. The vaginal wound is then closed with a running suture (the same one that fixes the fundus being used). The transverse incision can be closed in its natural position or in the same line as the median incision, if it is thought desirable to lengthen the anterior vaginal wall. No drainage is used.

If the cervix is eroded or much enlarged, it is best to amputate it, or at least its anterior lip, before completing the closure of the vaginal wound. The same stitch that closes the vaginal incision can be used to close the wound in the cervix. Bleeding from the cervix can be controlled by setting a deep stitch each side of it, including the vaginal branches of the uterin arteries.

When the operation is completed the following conditions are found: The uterus is covered and fixed in a position of slightly exaggerated anteversion; the cervix being displaced high upward and backward and out of sight; the bladder is now lying on top of the uterus instead of beneath it as formerly, and there is almost no bulging of the anterior vaginal wall, as one would expect. The rectocele can now be dealt with, and the perineum repaired by the modern operation of exposing the separated perineal muscles and sewing them together. If there is a possible chance of pregnancy occurring, as in a case where there is some doubt as to the menopause having been completely passed, the tubes must be divided and carefully closed on the uterine side. But most of the bad cases of vesicocele and prolapsus occur in women well past the menopause.

Of course, in young women who may bear children, the operation of transposition is contraindicated. In cases of very large, completely prolapsed uteri, a portion of the uterus should be excised longitudinally removing all of the endometrium if it is thought best. The hemorrhage is controlled by 8-inch forceps placed on each broad ligament, close to the body of the uterus, and later replaced by ligatures. The incision in the vaginal wall and the anterior wall of the uterus is then closed by the same running stitch, which fixes the fundus.

The results of the operation are: The

cystocele is cured by the plugging of the hernial opening; the prolapsus of the uterus is cured by shortening of the broad ligaments, which results from the tilting of the uterus forward and downward.

In the after treatment catheterization should be avoided if possible.

It is better to elevate the shoulders or allow the patient to sit bolt upright.

DISCUSSION OPENED

W. W. Grant, Denver: There are many cases of procidentia in women still in the child-bearing period with rectocele and cystocele. The Watkins operation, as well as the intramural sequestration, inaugurated or brought before the profession by Harris of Paterson, N. J., modified and elaborated by Murphy of Chicago, and Eastman of Indianapolis, which is very different from this, is appropriate before menstruation ceases.

More cases of neglected repair of the perineum in women in the child-bearing period are met with than the paper would indicate. None of these operations would be applicable to these cases.

In the cases of cystocele in women in the child-bearing period, with prolapsus and rectocele, I have used or devised a technique which is the simplest and quickest yet known for dissecting the vaginal flap, and that is to fill the bladder reasonably full of warm boric-acid water, and with broad scissors, catch the anterior vaginal wall beneath the mouth of the urethra between thumb and finger, clip the tissues and separate the base of the bladder from the anterior wall of the vagina with the finger in one minute's time. The distention lifts the bladder out of the vaginal depression, or cul-de-sac, which minimizes the danger of injury to the bladder in the dissection of the flap.

On the continent they are opposed to hysterectomy for these cases as a rule. In this country, many of our best men believe in hysterectomy for the cure of these women who have passed the menopause. The operation of intramural sequestration can be done much more effectively and scientifically, and it is a better operation, I believe, than the Watkins operation. With intramural sequestration even a working woman can spend the balance of her life without rectocele or cystocele or any of the uncomfortable conditions which result from these neglected cases of bad laceration of the perineum. We generally find that there is an unrepaired perineum which is the foundation of most of the cases, for the uterus is not necessarily large, and the prolapse can be repaired by other methods better than by the Watkins operation, with less cutting, less time, less danger. I am satisfied that the Watkins operation will not be the operation of the future.

C. H. Graves, Cañon City: As I understand Doctor Grant, the operation he recommends is practically the old Emmett operation with a lit-

the wider dissection of the vaginal wall from the bladder. This operation I think most of us have discarded a long time ago except in the milder cases of cystocele in young women. In the severer cases, especially when associated with prolapsus of the uterus, it practically always fails of a permanent cure. I became so discouraged with operations of this type that I had practically given up operating for this condition until the later and more effective operations came into vogue.

Repairing the perineum and doing an Emmett operation on the cystocele will practically never cure a bad case of prolapsus and cystocele. We must fill the opening through which the bladder protrudes, and firmly anchor the uterus in such a way that it cannot prolapse.

I think Doctor Buchtel's suggestion of curetting is good. Of course we would naturally do this if we considered pregnancy a possibility. It would, however, be a good routine practice.

Of course, as I stated, this operation is not one for young women during the child-bearing period.

A PLEA FOR ACCURATE DIAGNOSIS IN LESIONS OF THE URINARY TRACT.*

BY T. L. HOWARD, M.D.
DENVER, COLO.

The public as well as the medical profession is rapidly coming to understand that no physician, however learned, can be proficient in all branches of medicine.

Medical, and especially surgical, science has made wonderful strides in the last twenty years. But accurate diagnosis is now, I believe, possible more frequently in diseases of the genito-urinary tract than in any other department of surgery.

The object of this paper is to illustrate by specimens and X-ray plates the need of accurate diagnoses before subjecting patients to radical surgical treatment.

What today is probably our commonest major operation? What an every-day occurrence appendicitis is to many of you. One would think that a disease so common that the laity often diagnose it correctly should never be mistaken by one proficient in surgery and medicine.

This specimen (Fig. 1) is from a woman aged 35 years. It is just a shell of what



Fig. 1.

was a few years ago a healthy kidney. The history of the patient is this: Ten years ago she had severe backache, headache and nausea, with fever, which lasted for three days. After remaining in bed three weeks she had no more trouble for two years, when the attacks returned and became frequent. Wearing a corset, lifting, bending over, or working hard, was always followed by pain in the back, which extended down the right side to the urethra, and was intense, often causing delirium.

A diagnosis of appendicitis was made, and the appendix was removed December 10, 1907. The operation gave no relief, and for two years the attacks went on just as before. The pain became a dull, sickening ache and would continue for weeks at a time. The urine always looked clear until December, 1912, when, after a very severe attack of pain and nausea, the urine became bloody and thick. The slightest motion caused faintness and nausea. Relief could only be obtained by the use of morphine.

All this time she gained weight, and

*Read at the Annual Meeting of the Colorado State Medical Society, Oct. 7, 8, 9, 1913.

when seen at the County Hospital in July, her weight was 212 pounds. At Dr. H. R. McGraw's request, I cystoscoped the patient and found the right ureter occluded at a point 10 cm. from bladder. No urine or pus escaped either through the catheter or ureteral meatus.

From the history and cystoscopic examination I made the probable diagnosis of stone in the ureter, with complete blocking of right ureter, and here is one of the stones that caused the obstruction.

What should have been done five years ago was a careful examination instead of hurriedly removing an appendix, because she had pain over McBurney's Point, and vomited. Practically every patient is nauseated and often vomits when there is a sudden interference to the flow of urine from kidney to bladder. This patient's urine should first have been examined chemically and microscopically. Why? Because, if for no other reason, she was going to take a general anesthetic. What do you suppose would have been found? Probably a slight ring of albumen from the blood that was in the urine. The microscopical examination would certainly have shown red blood cells, and possibly casts and a few pus cells. This alone should have been sufficient for further investigation of the urinary tract. Then if one did not desire a cystoscopic examination, the X-Ray would have made the diagnosis, for even five years ago a stone the size of the one found here could have been demonstrated, and this patient would have escaped two major operations, five years of practically constant suffering and would have had two good kidneys.

The second patient is a female, single, aged 23. In the spring of 1910 she went to her family physician on account of pain in the left iliac region. A cystic ovary was diagnosed and removed at operation, along with the fallopian tube and appendix. Some months later a dull pain began

again in left abdominal region. It became so severe and constant she was forced to quit work, and rest. After remaining in bed some days the pain disappeared. Five months later came a similar attack, only the pain was worse, and she vomited during the attack. Some tenderness appeared in the kidney region, but no abdominal rigidity.

In December, 1911, she had the third attack, in which the pain was of a stabbing character, radiating down as far as the left knee. The desire to urinate was frequent. She was nauseated and unable at this time to retain nourishment.

From this time her attacks were every three to four weeks, and she was losing weight.

August, 1912, blood could be seen in the urine, and she was advised to have a radiograph made. This showed a shadow suggestive of a calculus in the line of the left ureter, and it was proposed to the attending physician that for verification, a cystoscopic examination be made.

Catheters were introduced into both ureters. The right passed easily to the kidney, while the left catheter met with an obstruction 20 cm. up. The patient complained of pain and nausea when this obstruction was encountered, and said it was of the same character as the pains she had been having since 1910.

An X-Ray was made after the injection of collargol, and you can see the right kidney pelvis well filled, but the left could not be injected on account of a small piece of stone, as it later proved to be, plugging the catheter.

The lantern slide shows plainly where the stone and catheter touch. Since the removal of the stone the patient has gained weight, and has had no return of symptoms.

There is one other kidney condition that so frequently has to be thought of in connection with appendicitis, and that is the

intermittent hydronephrosis of a loose or floating right kidney.

The following case is the best demonstration I have ever seen of a loose kidney producing intermittent hydronephrosis and closely simulating an appendicitis. The patient was a nurse in training at St. Luke's Hospital, Denver, Colo. She didn't belong to the type of patients in which you would expect to find the so-called floating kidney, for she is a fat woman. She thinks the attack of pain in her right iliac region first came after lifting a heavy top to one of the sterilizers in the operating room, and it probably did, for this top worked with a foot lever, and required considerable pressure to raise it. The attacks were frequent and accompanied with nausea, especially frequent if patients had to be lifted about, or beds made up, and disappeared if she assumed the reclining posture.

Dr. F. C. Buehtel was asked to see this patient during one of her attacks. His examination disclosed a tender area over McBurney's point; no mass of any kind could be felt, and there was not a sufficient amount of rigidity to indicate that the parietal peritoneum was inflamed. True rigidity of the anterior abdominal muscles is not produced by kidney lesions, with the exception of advanced perinephritic abscess.

Careful examination of a catheterized bladder urine revealed pus cells and red blood cells in sufficient quantity to call for further investigation.

She was cystoscoped and X-Ray catheters (catheters containing a lead salt) introduced to the pelvis of both kidneys, and a 20 per cent solution of collargol injected. Then radiograms were made both in the reclining and standing position. The former (Fig. 2) showed the kidney in normal position, but in the latter (Fig. 3) the kidney was seen to have dropped into the pelvis.

Ten days later the patient was operated on by Dr. Buehtel, and the kidney anchored. The appendix was removed and



Fig. 2.



Fig. 3.

found to be normal. She has never had a recurrence of her pain.

Dr. H. R. McGraw of Denver, this last month, very kindly allowed me to cystoscope and demonstrate by X-Ray exami-

nation a loose kidney that gave symptoms. He removed a pus appendix five years ago from this patient without complete relief of symptoms.

Now, this patient belongs to that class in which we so often find not only the floating kidney, but enteroptosis, for she is above the medium height, with little sub-cutaneous fat, and of a very nervous nature.

You can see from the two plates—one taken reclining, the other standing—the excursion the kidney makes. Even in the one reclining the kidney is not in its normal location.

At operation the kidney was found well below the iliac crest, with the upper pole completely free from attachments, and a firm band of fascia fixing the lower pole. It is this type of loose kidney that turns so often on its long axis and produces the main symptoms of movable kidney, as it interferes not only with the urinary drainage, but also with the blood and nerve supply. She has had no recurrence of her symptoms since operation.

On June 17, 1913, Dr. W. B. Craig asked me to cystoscope a female patient for him who had a palpable tumor in her right side. External examination showed a large, soft, fluctuating tumor in the right lumbar region that moved up or down with equal ease, and when down could be felt by vaginal examination. She was the mother of several children, and had been treated for "stomach trouble" by her family physician. She had no symptoms that were relative to any particular organ.

The cystoscope passed through the urethra without difficulty and the bladder mucosa and ureteral openings were normal looking. The catheter was inserted in the right ureter first and passed up without meeting any obstruction. Before the catheter was inserted in the left ureter, urine began to drip very fast from

the right catheter, and after six ounces had been collected I asked Doctor Craig to make pressure over the tumor. He found this slightly decreased in size and tension. Pressure increased the rapidity of flow through the catheter, and when twelve ounces of urine had been collected, the mass was quite flaccid.

A catheterized specimen from the left kidney showed a normal urine in every respect. The following day the large hydronephrotic kidney was removed with difficulty, and a much distended gall bladder drained through the lumbar incision.

The urologist is called on very frequently, especially in this part of the country, for a diagnosis in cases of kidney and bladder tuberculosis.

It is now the consensus of opinion among the best medical and surgical men, both at home and abroad, that little hope beyond surgical interference can be given the patient suffering with this form of tuberculosis, and the earlier the infected kidney be removed the better the prognosis.

Neither the specialist nor the family physician is consulted by this class of patients until there is frequent urination with pain. In nine cases out of ten the pain is vesical, becoming worse during urination.

The urine in early tuberculosis of the urinary tract is often very clear on inspection, and it's not until the centrifugal specimen is examined that red and white cells are found with the microscope, but these are always found if carefully examined for, in pathological numbers, even in the earliest tuberculous infections that give symptoms. If you begin searching for the tubercle bacillus in the urine of this very early stage, you will probably be disappointed, as they are few in number and naturally from a general specimen of urine, hard to find. If you still

haven't made up your mind that the condition is tuberculous, watch the progress of the patient very closely, and see if there is not a progressive increase of symptoms.

There are cases of reported spontaneous cures, and every disease due to infection has stages of more or less quiescence, but the rule with this class of cases and site of infection is one of retrogression. If your patient is fairly comfortable and you think a wait of five weeks not too long, you can inject a guinea pig with a centrifuged fresh specimen of urine and almost to a certainty see the diagnosis.

It makes but little difference whether you found bacilli in the urine or a positive diagnosis in the injected pig, if you are suspicious from symptoms and history that the case is one of urinary tuberculosis, there is only one thing to do—that patient must be cystoscoped. Why cystoscoped? First, the bladder to one doing cystoscopic work tells much, especially in tuberculosis. Second, if you found tubercle bacilli in the urine, you must know from which kidney they came. Third, tubercle bacilli are more readily found in the catheterized kidney specimen than the bladder specimen, and lastly, we should know whether or not the unaffected or least affected kidney is capable of carrying on the work when the infected one is removed.

The specimen shown here (Fig. 4) was removed from a female patient, aged 32, by Doctor McCartney of Denver, August 31, 1913, and it reveals clearly the results of procrastination on the part of this patient. September, 1912, she first noticed a frequent desire to urinate, with slight pain, and consulted Doctor Sewall, who suspected a tuberculous condition of the kidney, and referred her to Dr. Oliver Lyons. She was cystoscoped by Doctor Lyons, and a diagnosis was made then of a tuberculous right kidney. Think of the suffering she would have escaped had she taken

their advice then and had a nephrectomy done! She noticed blood in her



Fig. 4.

urine nine months after her first symptom. This came at the end of urination, and was bright red. She had no fever, no night sweats, but had lost fifty pounds in weight. Nothing is so trying as that never-ending desire to urinate.

On August 31, at St. Anthony's Hospital, I cystoscoped and catheterized both ureters while she was under ether anesthesia. The bladder fundus was very much inflamed, especially on the right half, but no definite ulcerations were found. Clear urine was seen issuing from the left meatus and milky urine very slowly from the right. Catheters were introduced to the kidneys. Pus came from the right catheter and about an ounce was aspirated through the catheter. This was immediately examined for tubercle bacilli, which were found. The patient was transferred to the operating table, and a very adherent pyonephrotic tuberculous kidney was removed.

This bladder inflammation was different from that usually found in those of the tuberculous infection in this respect: the right ureteral meatus was very slight-

ly inflamed, and instead of the greatest inflammation being at the base of the bladder, there was a diffuse inflammation over the so-called fundus of the bladder.

This patient may make a good recovery, but how much better would have been the prognosis a year ago had she followed the advice of her physicians, for her infection was suspected then and a correct diagnosis made.

There is one other condition of the bladder that can properly be diagnosed only with the cystoscope, and that is vesical tumors. (Guiteras: *Urology*, Vol. 1, p. 225.) The great majority of vesical tumors are of epithelial origin, and tumors of this character, no matter where situated, are either malignant or very prone to become so. Vesical neoplasms are not so prone to metastases as the malignant tumors in other parts of the body.

The mere fact that the vesical neoplasms are of slow growth, and so slow in spreading to the surrounding tissue, should not be the cause of delay in diagnosis and treatment.

The initial symptom in the majority of vesical growths is hematuria, and this hematuria is so peculiar that you are impressed by it. The bleeding comes on suddenly, often times very profuse, without any warning, and is independent of rest or exercise, and may stop as suddenly as it began, to remain quiescent for weeks. The bleeding occurs more often from the sessile and pedunculated growths which are the usual types, and very rarely in the infiltrating type until far advanced, for in this type the walls of the bladder are very thick and held rigid by the infiltrating mass.

Micturition is influenced greatly by the location of the tumor growth in relation to the vesical sphincter, by the infiltration of the vesical wall and by the shape of the growth. Pain is many times a late symptom and usually follows infection.

Heredity is a factor in malignant growths of the bladder, as it is in similar growths in other locations, and age of patient predisposes to certain types of tumor growths, for we find carcinoma oftener between the ages of 40 and 60, and sarcoma in childhood. As to sex, the prevalence is with the male.

With modern methods of diagnosing and treating vesical growths, we have much to offer our patients over the physician of even a few years ago, and we should see that the patient should be given the benefit of the doubt in all suspected neoplasms.

The specimen here shown was removed from a female patient, age 32. She was referred to Dr. I. B. Perkins on January 31, 1913, and gave the following history:

Had given birth to three children, all living and in good health. Three years ago tuberculous tubes and ovaries were removed by Doctor Perkins. September 1, 1912, had pain in the bladder region, but had noticed a frequent urination for several weeks previous. Began to rapidly lose weight, and urination grew very frequent both day and night. About November 1, 1912, had pain in right kidney region, almost constantly, and urine became very offensive. She did not pass blood until January 15, 1913, and had no fever until then. It was in September of 1912 she first consulted a physician, who irrigated her bladder with some mild wash. She was told when the pain began in kidney region that her trouble was tuberculous, as the bacilli were found in her urine.

When I saw the patient the last of January she was cachectic and had apparently lost a good deal of weight. The bladder urine was very foul, and the odor was the same as goes with the sloughing cancer of the uterus. A cystoscopic examination was made with the patient under a general

anesthetic, and a dirty grayish tumor mass was found occupying the right one-half of the bladder, including the ureteral meatus area, which could not be located. On distending the bladder with water you could see on the edges of the mass submucous hemorrhages take place, showing how stiff had become the bladder wall, which is very characteristic of the infiltrating bladder tumors. With the cystoscope in the bladder, a vaginal examination was made, and the mass, board-like in resistance, could be accurately outlined. It felt like a sarcoma and looked like a carcinoma, but with the history of a tuberculous peritonitis three years previous and tubercle bacilli having been found in the urine, with a painful kidney, we had to consider a very severe tuberculous infection. X-Ray examination made by Doctor Childs was negative to stone and pyonephrosis. The bladder urine showed no tubercle bacilli.

Several days later I assisted Doctor Perkins in an exploratory laparotomy. The abdominal viscera, except the right kidney and bladder, were negative in every respect. The right kidney contained about a pint of clear urine, the hydronephrosis due to occlusion of bladder ureter, by the tumor mass that was to all appearances malignant. The patient was in very little shock from this operation, and as a nephrostomy was done on the right side, her pain was less.

In consideration of the fact that there had been no involvement of the other abdominal viscera, and the patient's recuperative powers were so good, we advised a total removal of the bladder, with a double ureterostomy. This she consented to after a delay of six weeks, in which time she had grown much weaker.

We found the tumor had spread very fast in this short space of time, and nearly the entire bladder was involved. The bladder, uterus and vagina were removed

and both ureters brought through stab wounds in the back. The patient regained consciousness for a few minutes only, dying at the end of three hours.

Had an early diagnosis been made in this case I feel sure, with the resistance and recuperative power she showed, much in a surgical way could have been done to prolong her life.

The profession is confronted by one class of patients today who come with a history of bloody urine, and that is all we are able to elicit from them. They have no pain, unless it be a heavy or dull sensation, as they describe it, across the small of the back. The blood is intimately mingled with the urine and does not come at the end of urination, as you so often find in bladder tumors, and ulcerations of the trigone and urethra.

The hemorrhage differs from that accompanying neoplasms, stone and tuberculosis of the kidney in this respect; it is persistent for days, and sometimes weeks, when once it begins, and is a painless hematuria, for it seldom forms a blood clot in the ureter or pelvis of the kidney.

The microscopical examination of the catheterized kidney urine shows only red blood cells and a proportionate number of white cells, with none of the pus, bacteria, masses of kidney epithelium, calcium oxalate crystals or tissue threads that you find in various other lesions of the kidney that give hematuria.

You examine the catheterized urines from both kidneys chemically, and you find them excreting the same amount of urea, and a pyelograph shows normal calices and pelvis. Then if you do a nephrotomy in hopes of finding some reason for this persistent hematuria, for often you are forced to this, as your patient is losing weight very fast and growing rapidly weaker, you find nothing wrong with the kidney, except that it may be slightly larger than you supposed it should be, or

bleeds, maybe, freer when you strip the capsule, than they usually do. The pathological report on a section, if removed from the kidney, is negative.

This routine has been gone through many times in the past few years with this class of cases, without any definite cause being found, so the name "essential" hematuria given at first, still remains. Braasch: *Clinical Observations on Essential Hematuria*. Jour. Am. Med. Assn., September, 1913.)

Some of the hemorrhages stop of their own accord, a few following adrenalin injection into the kidney pelvis; others after the use of horse serum, or after catheterization and pyelography.

On August 5, Dr. Edward F. Dean of Denver asked me to see a patient with him, who gave a history of having had a nephrotomy done nine years ago for hemorrhage from the right kidney, no cause having been found. The blood in urine stopped five days after operation. She at the present time has been passing bloody urine for two weeks. The blood is intimately mixed with the urine. There is no pain of any kind. She is growing weaker and losing weight. Naturally, on cystoscopic examination I expected to find the kidney of nine years ago giving the trouble, but bloody urine was seen coming from the left meatus.

Catheters were introduced to the kidneys, and clear urine was obtained from the right, and after much manipulation, a bloody urine from the left. The urine came in rather a large quantity from a point about half way up the ureter, and Doctor Dean thought he could feel at this point a soft mass.

A very careful chemical and microscopic examination was made of the two urines. The urea from each side was equal and about normal, only red cells and a few white cells were found in the left urine. So we told the patient her kidney

would not, in all probability, be removed.

On operating a few days later nothing could be found that indicated the slightest disease in the kidney or ureter, unless it was a very free bleeding when the capsule was stripped from the kidney.

On the sixth day following the operation all blood had disappeared from her urine, and she has returned to her home in Wyoming.

There was one other thing that should have been done in this case—the ureters and kidney pelves should have been X-rayed, and then we would have been in a better position to say there was nothing wrong with the kidney, but that it was probably a case of essential hematuria.

This next case gave the same history of painless and persistent hematuria, but the urea from the bleeding side was .8 per cent and from the other 1.2 per cent.

The X-ray plate shown indicates a true kink with accompanying dilated calices. Dr. I. B. Perkins and Doctor Hickey, who referred the case to me for diagnosis, operated and removed the kidney on January 30—seven days after examination—and this is the pathological report as made by Doctor Hillkowitz: Section of kidney of Mr. M. M. D. reveals an apparently normal appearance of the tubular epithelium. There is, however, a considerable hyperemia in the blood vessels and numerous foci of hemorrhage both in the glomeruli and between the tubules. There is no sign of tubercle formation.

The differential points to be made between this case before operation and the true so-called essential hematuria is, first, the increase of pus cells; second, the deformed kidney pelvis and calices, and, third, the decreased excretion of urea.

The conclusions I would like to draw from the cases related are: First, the importance of an accurate history of patients coming to you and presenting symptoms relative to the urinary tract.

Second, when they present a history of this kind, don't neglect a careful urine examination, nor to interpret what you find there.

Third, in the examination of the patient learn to differentiate between true and false rigidity, and

Lastly, explain to your patient how an accurate diagnosis can be made.

DISCUSSION.

Oliver Lyons, Denver: A few years ago urology, this seemingly young handmaiden of medicine, was unknown. We were formerly classified as genito-urinary surgeons, and competition from certain quarters made it rather difficult to be recognized other than as a clap doctor. The idea prevailed that our duties were largely devoted to entomological researches in crab lice to dusting the chancre and irrigating the urethra. But as matters are now going and from the looks of the present program, I venture to say the position of urology before many years will be that of handmaid to general medicine, for the cystoscope, the ureteral catheter and the tests for renal functions are the work of the urologist; and upon them we depend for our well-founded belief that accurate preoperative diagnosis in lesions of the urinary tract is today not exceeded in any other branch of surgery—probably not equalled.

In all branches of medicine it is being actively taught that it is against professional morality to treat symptoms with palliatives, for fear the early and most favorable opportunity will be lost for removing the cause. The symptoms of urinary disease should always be connected with the more important signs that can be detected by the cystoscope, radiography, urinalysis and bacteriology. The day for treating symptoms has passed. This applies to urology more than any other branch of medicine. For instance, take hematuria as an example: One way of treating this condition is to put the patient to bed, give horse serum, ergot and opium. In a few days the blood disappears from the urine, the patient is discharged cured and allowed to return to work without ever having a complete examination, save that the urine be examined for casts or albumen. In a few months the hematuria returns, to be stopped (?) by the same treatment. After a year or two the hematuria discloses itself, when too late for curative treatment, as an inoperable tumor of the bladder or kidney, or as a stone that has completely destroyed the kidney in which it is concealed. In all cases I would say hematuria asks a question that requires an early answer. What is the cause of the hematuria? The Golden Rule should be that hematuria demands early cystoscopy and should never be met with drugs and delay. And the practitioner should not rest quietly until

he has satisfied himself as to the cause and whether an operation is required.

The case is equally true of other symptoms in urinary disease—pyuria, increased frequency and difficult urination, pain, etc. Pus, just the same as blood, can be traced to its source with the cystoscope, ureteral catheter and X-ray. Just as successfully as hematuria can pus be detected as coming from the urethra, prostate, vesicles, bladder, kidney, or kidneys, by means of Janet's five-glass test, prostatic massage, cystoscope, and ureteral catheter.

Urology has been making rapid advances in the way of diagnosis in the last few years. First, the improvement in the technique of ureteral catheterization and the introduction of numerous tests of the functional power of the kidneys that by means of the ureteral catheter can be applied to the urine, drawn off from each kidney separately. The application of these tests has minimized the dangers of nephrectomy to a degree little short of startling. In 1900 the mortality from these operations was 40 per cent; in 1904, with a limited use of the functional tests, the mortality was reduced to 12 per cent; up to 1909, Albarran, with a more extended use and a better interpretation of the findings, was able to publish a series of 108 consecutive cases of nephrectomy, with a mortality of less than 3 per cent, and in the future the mortality should be much less if the diagnosis is made early, which can only be done by the ureteral catheter. In every case presenting symptoms indicating the use of the cystoscope, the results of such tests supply the best answer to those who, slow to employ them, still criticise them on hypothetical grounds.

Secondly, the introduction of the X-ray for the detection of stone. Although this plays a minor rôle in the diagnosis of stone in the bladder, it should never be omitted in the routine examination, as many stones in the bladder are accompanied by multiple stones in one or both kidneys, and it would be of little use to clear the bladder if a gravel pit be left behind in the kidney. Then, too, we must remember that we have other conditions that will mimic in all respects stone in the kidney. Take the classical symptoms of stone in the kidney—fixed pain in the back, hematuric and urethral colic—they are only of value insofar as they lead to a complete examination of a patient. A partial examination will not do, for we frequently find stones down in the lower part of the ureter that will mimic in all respects stone in the kidney. Of course, it is not always wise to cystoscope during the attack of stone.

Thirdly, in the development of the bacteriology of the urine, there are great possibilities. A careful microscopical study of the urine—not a rapid examination with a low magnifying power for tube casts alone—but the use of the higher magnifying power of 500 diameters, will clear up many doubtful cases. In absolutely every pathological lesion of the urinary organs, no matter how simple, pathological products of the lesion are bound to show in the urine. These will be found in the

form of pus corpuscles, red blood cells and epithelial cells from the organ in which the lesion is located. It is by no means necessary to find tube casts in the urine to diagnose kidney lesion. The fact is in a number of cases of severe kidney disease tube casts need not at any time be present in the urine, and in many of these cases the amount of albumen may be so minute as to be entirely overlooked. It is here that our ability to diagnose the epithelial cells in the urine is of the most importance in arriving at a correct conclusion.

These facts must be brought within reach of the large number of patients suffering from urinary disease, and it is mostly through the general practitioner that this can be attained, as he is usually the first to be consulted for such conditions. It is not, perhaps, possible for a busy practitioner to be expert in all technical manipulations required by the subject, but he can make himself conversant with the significance of important symptoms, and should decide from these symptoms when a complete examination of his patient is advisable.

Ora S. Fowler: I wish to express my appreciation of Dr. Howard's paper. Exploratory operation on the kidney I can regard only as a mutilating procedure. When you lay a kidney wide open to see what is inside, be kind enough to your patient to take the kidney out, because 65% or 70% of them have to be taken out in the next few days for secondary hemorrhage, and if the kidney remains in, you destroy two-thirds or three-fourths of the functioning of that organ. Exploratory operations on the kidneys are unjustified, and you often-times get into deeper water than you can get out of. I might recite case after case illustrating this, some of them with very serious results.

Suppose the practitioner has a case in which he suspects kidney stone, and he sends the case to the radiologist for x-ray, and no stone shadow is found—he then considers his duty finished. There are many other things about the kidney that simulate stone, to one of which I called attention two years ago, viz., intermittent hydronephrosis, probably 45% of cases of which are mistaken for appendicitis.

Your task is not finished when you have been to the radiologist. You should send them to the urologist, to determine whether or not the kidney is at fault in a mechanical way.

Some general surgeons have said that there is danger in cystoscopic prostatic cases in old men. I disagree with them. There is no more serious risk in cystoscopying an old man than in catheterizing him, and you can make an accurate diagnosis by a cystoscopic examination. I would not neglect it in any case, because I do not think I can do my whole duty to the patient until I know just exactly what is in the bladder. If there is a stone in the bladder with enlarged prostate do not do a perineal prostatectomy, but a suprapubic. One case Dr. Howard mentioned. I am sure he had the same notion as I. He spoke of no urine appearing in the catheter. I have had the same thing occur from catheter inhibition, and after the catheter is in the ureter for as long as

twenty-five minutes the kidney may commence secreting normally.

Furthermore, in the location of the stone, it is not enough to demonstrate that you have a stone shadow in the kidney region. You must orient the stone in reference to the pelvis of the kidney or to each calyx, so that you can go down directly upon the stone without having to do unnecessary injury to the kidney.

My observation of loose kidneys in fat women indicates that fatness does not prevent a kidney from being loose. I now have a number of such cases and I reported one two years ago in which the woman weighed 240 pounds.

The point I want to emphasize is that we should have well patients with two kidneys left, instead of one kidney and one specimen brought here. If you stay around the hospitals you will see only slightly hydronephrotic kidneys removed, when, if an exact diagnosis had been made beforehand, a conservative operation could have been done on the pelvis and the ureter, instead of removing the kidney. We owe it to the patient to make the diagnosis, and if as a general surgeon you cannot make it, send him to some other man who can make the diagnosis and help you out. We must get together on this matter and serve only one person, and that the patient.

W. M. Spitzer, Denver: The cystoscope does not make a urologist. To be a urologist a man must understand his subject from beginning to end. There are conditions in the posterior urethra that will simulate appendicitis, and there are conditions in the anterior urethra that will simulate kidney conditions, and there are conditions occurring anywhere in the genital or urinary tract that will simulate almost any conditions which may occur in the abdomen. I have records of five cases of recurrent exacerbations of vesiculitis that simulated appendicitis, and in two of these cases the appendix was removed for the condition. To be sure, when you have an epididymitis with a vesiculitis, the vesiculitis is easily diagnosed; but sometimes when a vesiculitis occurs without the concurrent epididymitis, it is a very puzzling condition indeed. Furthermore, to make a diagnosis very difficult, vesiculitis does not only occur in patients who have had gonorrhea, for in perhaps 30 or 40 per cent of the cases of vesiculitis that come to us, the history of gonorrhea is absent. The Doctor emphasizes in his paper that early diagnosis is necessary. It certainly is, but is not always easy, and sometimes much work will have to be done to establish a diagnosis in these very early cases. Many patients will have to be cystoscoped and returned to the surgeon with the answer that there is nothing wrong with the kidneys, if this work is to be properly done, because the urinary tract must always be taken into consideration in obscure abdominal lesions, if only to be excluded. Suppose, for instance, a patient with a little pus in the urine and a pain located somewhere between the gall bladder and the appendix. It would be rather difficult to localize the pain any more closely than this. Suppose the patient has been to the roentgenologist, who fails to

make a diagnosis of a gall bladder lesion. It may be appendicitis; it may still be gall-bladder trouble; it may be a renal condition. The urolog can at least exclude the urinary tract, and the diagnosis is narrowed down that much further; and exclusion in a case of this sort is the only way a diagnosis can be arrived at. Early diagnosis is important for other reasons than to determine the measure or measures necessary for the cure of the patient. In renal tuberculosis, if a diagnosis be made early, before the bladder has suffered much, and if the kidney be removed, the patient's chances of complete recovery are good; whereas, on the other hand, when a late diagnosis is made, and the bladder very much injured by the tuberculosis, even though the kidney be removed, the patient remains miserable for the balance of his or her life, in about 15 per cent of the cases, suffering just as much as before the operation.

Samuel B. Childs, Denver: The Society is under obligations to Doctor Howard for presenting this very interesting subject, and also for calling to our attention the fact that a correct diagnosis can be made early in nearly all of these conditions of the genito-urinary tract. He cited several cases. He had some others on tap, but the ones which he recited emphasize the fact that the collaboration of the cystoscopist and the X-ray man is demanded in a great majority of the cases of disease of the genito-urinary tract. A man in an adjoining state was operated on something like a year and a half ago for what was supposed to be a floating kidney. The kidney was anchored in the usual manner; and the wound healed by first intention and stayed healed for three weeks. At the end of this time the wound broke open and a sinus persisted for nearly a year, at which time he was referred to me for an X-ray examination. He had obtained no relief from the symptoms for which the operation was performed.

A little bismuth had been injected in the sinus tract, and upon the first X-ray examination I could see very plainly the shadow of a calculus in the kidney, and I could also see a bismuth shadow, which was separated apparently an inch or so from the stone. A stereoscopic pair of plates was then made, and by connecting the three dimensions on the plate I was able to demonstrate that the circumscribed bismuth shadow was from bismuth adhering to a sponge which had been left in the muscles of the back at the previous operation, and that the stone was still present in the kidney. Both of these conditions were verified by operation, and the patient made a complete recovery.

Symptomless hematuria has been referred to, and it is a condition which puzzles everyone. By means of the cystoscope and the X-ray examination we can probably eliminate stone, tuberculosis of the kidney, tumor of the kidney and other conditions which might cause the blood in the urine; and still be unable to detect any condition of the kidney to account for the hematuria.

Nowadays we consider an X-ray plate of the

kidneys unsatisfactory unless we are able to show the shadow of the kidney, and in nearly every case we can do this unless there is so much gas in the intestine that the kidney shadow is obliterated. Having been able to exclude practically all the known demonstrable causes for hematuria, we have left that class known as symptomless or essential hematuria. This class of cases we can diagnose only by exclusion of the other conditions. When the patient is sent to bed for a few days the hematuria will disappear, but it will reappear again as soon as he gets up. This is generally conceded at the present time to be caused either by a varix of the renal papilla or a passive hyperemia from torsion of the renal artery or the renal vein, or, most commonly, by a glomerulo-nephritis, so that in many of these cases it is absolutely necessary for the collaboration of the urologist and the X-ray man before we can arrive at a fairly accurate diagnosis.

C. Herman Graves, Cañon City: One feature that has not been spoken of is the test for the functional activity of the kidney. You must not always depend too much on the test of the functional ability of the opposite kidney. In a great many of these cases the specialists tell us that the other kidney has so little functional ability that it could not possibly support life. Yet, after operation, that kidney goes ahead and functionates remarkably well, and carries the patient along all right.

In tuberculous kidney you frequently find considerable albumin in the urine from the opposite kidney. Soon after the operation this albumin generally clears up, and the functional ability of the kidney increases remarkably.

Doctor Howard, Denver: I regret very much that in the time allotted to the reading of papers I could not complete mine, but appreciate the kindness with which my remarks have been received.

Doctor Graves is quite correct in stating the importance of ascertaining the functional capacity of the kidneys, and if he reads the paper he will see that I brought out this fact.

I desire to thank Doctor Childs for his assistance in preparing the lantern slides from plates he made, and Doctor Hillkowitz for the excellent preservation of the pathological specimens shown.

URETERAL OBSTRUCTION, ETC.

Addendum to Discussion of Paper by O. S. Fowler on Urinary Stasis and Nephropexy, published in July issue of Colorado Medicine. (Owing to a misadventure, the manuscript of Dr. Fowler's closing remarks was not in the Editor's hands when the paper was published.):

DISCUSSION CLOSED.—Ora S. Fowler: Answering Dr. Howard's question: I think he misunderstood me, as I said I was able to squeeze urine through and past the obstruction, thus proving patency of the ureter. As to the drainage from the kidney when we are on our back, the kidney is simply slightly rotated in its normal plane, and therefore the drainage is the same. The gain is entirely when we are upright, and we are upright about sixteen hours of the twenty-four.

Dr. Lyons' discussion in reference to Dr. Albarra's results shows that my findings are practically the same as his, and that is just what I am contending, that there is some unusual condition in a kidney before it becomes, or can become infected. As to the rotation of the kidney into its new position, producing a drag upon the nerves and vessels of the pedicle, I would say that the position of the pedicle is not altered, the kidney is rotated with this as the center, and I know before the wound is closed that the vessels are functioning properly and are not being dragged upon or embarrassed. The time when there is a drag upon the nerves and vessels is when the kidney is down so far that its only support is its pedicle.

In reference to the case Dr. Spitzer spoke of, he really left out the most important fact of the after history, and that is, that the patient died soon after he operated on him. However, I want to say that there was a most valuable lesson in that case, for before my rotation nephropexy the urine was so foul that its peculiar odor would fill a room, and after putting the kidney in its new position the urine was absolutely clear within three weeks, as I demonstrated before the County Society clinic at St. Joseph's hospital. We were then able to demonstrate tubercle bacilli, which had been impossible before operation on account of the large amount of pus. We feel that this offers considerable proof that there is a distinct advantage in the new position given only by my rotating operation, where gravity is added to whatever other forces there are, in emptying the kidney pelvis.

You may feel impelled to talk against it from a theoretical standpoint; but if you will try this operation you will find it so simple and so extremely practical that you will adopt it permanently.

THE TREATMENT FOR MAGNETIC FOREIGN BODIES IN THE EYE.*

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Among the injuries to which the eye is subject, none is of greater importance than penetration by a magnetic foreign body. A patient may suddenly lose his vision from a severe lacerating wound, from a blasting accident, or from a shot wound; but in neither of these instances is the surgeon's power for good or evil so great as where a piece of iron or steel has become lodged in the posterior segment of the eye.

If a fairly large foreign body has

passed through the lens, this rapidly becomes opaque, preventing an examination of the fundus. In some other cases the ocular media may be clouded by the presence of blood. If the foreign body was small, it is by no means always a simple matter to decide whether the blow was a glancing or a penetrating one. Moreover, the foreign body may have passed through the eyeball, to lodge in other tissues of the orbit, in which case its removal is commonly not a matter of importance. Articles of steel or iron are sometimes retained within the eye for months or even years before marked symptoms occur. But it may be stated as a rule that an eye in which is lodged a piece of steel or iron is doomed to destruction; and worse than this, that there is risk of loss of the second eye from sympathetic involvement. There can be no hesitation in saying that the patient must be urgently advised to submit to an attempt at removal of the fragment.

For a good many years the only apparatus outside the magnet available for determining the presence or absence of a magnetic foreign body in the eyeball, when it was impossible to view the fundus, was the sideroscope. The general principle of all instruments of this kind is the suspension of a magnetic needle near the eye, so that its movement indicates the presence of a magnetic foreign body. Even the better instruments furnish only limited information as to the location of the foreign body. Unfortunately the vicinity of any large body of iron or steel, or proximity to the electric current, renders the action of the sideroscope decidedly uncertain.

Ophthalmologists are coming more and more to rely on the use of the X-ray for exact localization of magnetic particles. The best methods for utilizing the X-ray depend on precise geometric calculations, based upon two X-ray negatives showing the relative positions of the foreign body

*Read at the Annual Meeting of the Colorado State Medical Society, Oct. 7, 8, 9, 1913.

and of certain fixed points outside the eye. Of the two or three best methods, the oldest is that of W. M. Sweet of Philadelphia. According to this writer, the X-ray rarely leads to a mistaken diagnosis, provided accurate technique and a photographic negative are used. Among 702 cases in which his method was employed, Sweet records only two cases in which a mistaken diagnosis resulted from images of very thin scales of metal being covered by dense bone shadows. Of the 702 cases, a foreign body was present in 395, and in 311 of these the fragment was in the vitreous.

Until 1877 all attempts at the magnetic extraction of a foreign body were made with a permanent magnet. In 1879 Hirschberg reported the "first extraction of a splinter of iron through a scleral incision with the aid of the electro-magnet." Sulzer, Snell, Gruening, Bradford and Hubbell published modifications of Hirschberg's magnet. In 1892 Haab presented to the German Ophthalmological Society his "giant magnet," an electro-magnet weighing about 120 pounds. Since that time a number of "giant" magnets and "hand" magnets have been devised, and a good deal of controversy has raged concerning the relative merits of the two types.

The statistics of different writers on this subject are as various as their opinions. A series of 165 cases in which the giant magnet was used, reported by Haab, showed a percentage of 86 in which the foreign body was successfully removed. But only 71 out of the 165 eyes obtained useful vision; and of these 71 only 51 had "good" vision. Coppez, whose report is limited to fragments lying in the vitreous, obtained good vision in one out of 33 cases, in 28 of which extraction was successfully done.

In America, Sweet reports the results of 86 cases of foreign body in the posterior segment of the eye, operated upon by surgeons of the Wills Eye Hospital, Philadel-

phia. All of these cases had been observed for more than six months after operation. Vision of 6/12 or better was obtained in 24 cases. Bull's experience with the giant magnet was quite depressing. In reporting the post-operative history of 18 vitreous cases, in 17 of which the foreign body was successfully removed, he states that "permanent useful vision was not gained in a single case." Callan, on the other hand, reports good vision in seven or more out of a total of 22 cases, mostly treated with the Haab giant magnet.

At one point in particular Haab's practice differs very essentially from that of his critics. When the giant magnet was first used the X-ray photograph was unknown. Perhaps in no department of medicine does X-ray photography offer a greater improvement in diagnosis than in the localization of foreign bodies in the eye. Yet Haab still clings to his original recommendation that the magnet should be the mainstay of diagnosis. If on approaching the magnet to the eye the patient feels pain, the presence of the magnetic foreign body is established.

Unfortunately, this procedure is attended by two distinct risks. One is that the foreign body may be much larger than is suspected, in which case the magnetic attraction will be unexpectedly great, and the fragment may be drawn with considerable force towards the point of the magnet, inflicting severe damage on important structures of the eye. The second danger is that, whether the patient experiences any sensation or not, the piece of steel or iron may be drawn from a free position in the vitreous towards the ciliary processes. In this location it is much more likely to set up rapid and dangerous inflammation, and at the same time the difficulty of its extraction is decidedly increased.

Some months ago I had the privilege of assisting at the examination of an enucleated eye in which this latter accident had

occurred. Repeated use of the magnet had furnished no useful information, for the patient had noticed no pain. Yet the piece of iron, which had entered through the upper part of the lens and had at first dropped to a point in the vitreous some distance back of the lens, had almost certainly been drawn by the magnet from this position to the much more dangerous one of contact with the lower part of the ciliary body. Here it had set up a suppurative process much more active than had accompanied its earlier position in the vitreous.

Of the diagnostic use of the magnet Hirschberg speaks in the following terms: "For a length of time some colleagues were in the habit of employing a very raw procedure;" and elsewhere, "This mode of examination is dangerous, and has in my experience drawn the large splinter into the ciliary body, from which it could not be removed, so that the eye was lost."

Haab still greatly prefers extraction through the anterior chamber and cornea, and also dismisses resort to the diagnostic use of the sideroscope and X-ray as so much waste of time. But his objection to the delay involved in making and studying X-ray photographs does not seem well grounded. The time required for X-ray localization should mean at most but an hour or two's delay, which ought to be amply compensated for by the greater certainty with which the case can be handled, and the lessened risk of severe traumatism to the eyeball.

The opponents of an incision in the sclera, made as near as possible to the foreign body, maintain that it greatly increases the risk of subsequent retinal detachment. But many cases have been recorded in which there was no sign of detachment years after the operation, and in which the patient permanently retained excellent vision. In this class is the first case so treated and reported by Hirschberg. The method is still largely used by Hirsch-

berg himself, and is recommended by De Schweinitz in a note to his translation of Haab's "Operative Ophthalmology."

In a discussion at the American Ophthalmological Society three years ago, Dr. Edward Jackson stated that he had "always felt that the giant magnet, with the Haab method of using it, furnished an easy, rather than a superior, method of extracting foreign bodies from the eye." In the same discussion Dr. Jackson mentions a case seen with the late Dr. E. W. Stevens, in which the piece of steel had passed in through the lens and remained suspended about the middle of the vitreous. Instead of attempting to draw the fragment back through the lens, an incision was made through the sclera, and the splinter removed, at the first attempt, with the hand magnet. There was severe reaction, but the eye subsequently obtained a perfectly clear lens with excellent vision.

This case was presented before the Colorado Ophthalmological Society last October, when the eye showed no change for the worse. At the same meeting Dr. Jackson also showed a patient from whose eye a piece of steel had been extracted through a scleral incision five years earlier, and whose corrected vision was still practically normal in this eye.

The following personal case illustrates the slight disturbance produced by a scleral opening, as well as the very kindly healing which follows such a wound aseptically made:

A. G., aged 20 years; came on July 10th, 1912, on account of pain in the right eye. Nine days earlier he had been engaged in driving a bolthole, when a piece of steel flew into the eye. The eye had given him practically no trouble until this morning. There was a slight ciliary injection, and a tiny wound of entrance could be seen to the nasal side of the cornea, and in the periphery of the iris. A one per cent solution of atropin produced only moderate di-

lation. The lens was perfectly clear, and with the ophthalmoscope a foreign body, surrounded by gleaming exudate, could be seen in the lower part of the fundus. The dilatation produced by solid atropin was imperfect.

That afternoon, under cocaine, and after incision of the conjunctiva near the limbus, a meridional incision six or seven millimeters long was made with a cataract knife, back of the ciliary region in the lower temporal quadrant of the eye, over the estimated position of the foreign body. Application of the hand magnet to the lips of the scleral wound at once brought away a scale of iron which was later found to weigh 5.58 mg., or about 1/11 grain.

The next day the eye was at least no redder than before the operation; the pupil was more widely dilated, indicating absence of ciliary irritation, and the conjunctival wound was closed. Eleven days later the eye was perfectly quiet. The operative wound could be seen clearly as a white oval area in the lower part of the fundus.

On August 1st the vision of the injured eye, with correcting lens, was 4/4 most.

At the October meeting of the Colorado Ophthalmological Society, the same lens gave vision of 5/4 part, equal to that of the uninjured eye.

318 Majestic Building.

DISCUSSION.

James A. Patterson, Colorado Springs: It seems to me it would be of some value to discuss the relative merits of different methods of extraction, since this has been brought up in the paper. In the use of the Haab magnet some very essential features that Haab first laid stress upon are not sufficiently carried out. One great advantage of the magnet for diagnostic purposes is the saving of time. I think there is no question that an X-ray examination is quite an advantage, though there is much less danger from a magnet applied for diagnostic purposes if the instructions of Haab are carried out that there should be some way of quickly turning off the current; he uses a foot pedal by which the current can be turned off and on quickly. I am sure I lost an eye not many months ago, although I had a fairly

quick way of turning the current on and off, because I failed to carry out one precaution that Haab lays stress upon—never to have the patient so that he cannot jerk the head away quickly. My patient was a very peculiar child, and while he was willing to cooperate to a certain extent there was great difficulty in learning what he really felt.

As regards the removal of a foreign body through the natural way or through its point of entrance, when it has entered through the anterior chamber, it is assumed that one knows that a foreign body drawn forward should always travel around the lens and come through the zonule. A foreign body that is large Haab tries to start with the magnet some distance away from the eye; if a small one you can approach closer. That point was brought out by Doctor Crisp in saying that one of the difficulties in this method is to know the size of the foreign body. The magnet point should be placed opposite the center of the cornea, the current repeatedly switched off and on, and bulging of the iris watched for, when the foreign body is to be coaxied into the anterior chamber, where it may be removed by incision or otherwise, as conditions indicate. Haab lays stress upon the great danger of throwing the foreign body into the ciliary region, where it will do almost irreparable damage.

I feel that if I had a foreign body of steel in the vitreous of my own eye, that had been properly located by the X-ray, I should much prefer that it be removed through an incision in the sclera than to have it brought out through the original passage of entrance, assuming it to have entered through the anterior segment. By this method the danger from infection is almost nil, for you know we frequently incise the sclera for glaucoma and detached retina and almost never get infection.

The point as to retinal detachment is possible, but is such a small factor that all in all I believe it is a safer method than the other, because if you bring the foreign body forward through the original entrance in the anterior segment, it must be brought around the iris and not be pulled through in any other direction.

Melville Black, Denver: There are two or three things that occur to me in connection with this discussion. One is the importance of localization; this cannot be overestimated. Haab's methods differ from those of a great many, because, in the first place, he has a very powerful magnet, and he has learned to use it in his own way, and while he disregards the necessity of localization, those of us who are not so fortunate as to have magnets of the size he uses, must of necessity depend upon some definite method of localization. We have in Denver, fortunately, a few men who are capable of locating a foreign body in the eye with great accuracy; and unless you can depend thoroughly upon your radiographer to do this, he is oftentimes a very dangerous individual. I remember one instance in which a railroad case had to be referred to a man whom they selected to make the radiogram. This man assured me that the eye contained a foreign

body, and after persistent efforts to remove the foreign body, the eye was so badly damaged that it was enucleated, while the foreign body, as a matter of fact, was in the orbit all the time. This was a most unfortunate case, and illustrates the necessity of being able to depend absolutely upon your radiographer.

It is possible to locate a foreign body certainly within a millimeter in any direction in the eye. That being the case it can be readily understood what an advantage it is to know exactly where the foreign body is situated. If in the vitreous, its method of extraction depends upon the condition of the lens. If the lens is opaque and cataractous, I believe the better route to extract that foreign body is by a corneal incision with iridectomy, followed by lens extraction, and lastly the application of the magnet. In many of these instances a foreign body is located in the lens by the radiographer. There oftentimes we can extract it with the very greatest ease without disturbing the vitreous. If, on the other hand, the lens is clear, or, if only very slightly affected and there is a possibility of the lens not becoming opaque, then I believe the better plan, for me at least, with the magnet that I use, is to attack it through a scleral incision.

Someone came out very recently with a sliding flap in scleral incision. I have had an opportunity to use it once in a very desperate case, and was very much pleased with it. It assures protection of the scleral wound better than a simple suture.

In using the sliding flap a conjunctival incision is made horizontally, so that the sclera can be well exposed. Then we pass our cataract knife through the sclera choroid and retina, not going any great way into the vitreous. Having extracted the foreign body, a suture is passed through upper lip of the incision under the lower flap and brought up through the conjunctiva and tied. Then another suture is passed through the exposed lip and fastened to the conjunctiva lying under it, thus making a double covering for the wound. The tension on the conjunctiva tends to hold back any vitreous which is coming through the scleral wound.

I reported a good many years ago some ten or fifteen cases in which I had used the little old hand Hirschberg magnet that was not longer than three inches and not much bigger around than the thumb. It had very little power, and out of this report of cases I think there were something like 60 or 70 per cent, in which very good visual results had been obtained. The more I use the magnet the more I am impressed with the idea, either get it just as big as you can get it, or else get a small-sized magnet. If you are going to get an awkward one get one that is just as big as you possibly can, because any of the middle-sized ones are just about as awkward as the big ones, and have no particular advantages over a Johnson magnet, which is a good deal easier of manipulation.

D. H. Coover, Denver: I have never had the pleasure of using Haab's magnet. When a foreign body enters the eye and one sees the pa-

tient within twenty-four hours, Haab's magnet may do no harm, but where the foreign body has been in the eye for forty-eight hours or longer, I believe that more damage is done to the eye with this magnet than with a smaller one.

Where the lens has become opaque, and the foreign body has been located by the X-ray, I believe in making an iridectomy and removing the lens; then I pass a spud, such as I have lately had made, consisting of steel, the point being a little larger than that of the ordinary spud with which we remove foreign bodies from the cornea. I pass this spud through the incision into the vitreous and apply the magnet to the spud. I have been very successful in removing magnetic foreign bodies in this way.

Foreign bodies that are encysted are the ones that give the most trouble. I believe in those cases the scleral incision is the better way of removal. I make an incision in the conjunctiva with a pair of scissors, loosen it thoroughly a little above where I expect to enter the eye, making the incision through the sclerotic with the Graefe knife, and then apply the magnet to the lips of the wound. If this fails to remove fragment I then pass the Jackson scissors through the incision and cut the exudate that surrounds it, applying the magnet to the scissors. If this fails to remove it I use the spud, but the last time I attempted to remove a foreign body I failed with the scissors and spud, but finally brought it out by placing the magnet at the incision. In this case the foreign body had been encysted for thirteen months.

William H. Crisp, Denver: The point Doctor Black made about the relatively poor value of the medium-sized magnet was well taken. The medium-sized magnet does not give you such a preponderating increase of power as would enable you to fetch small foreign bodies from some considerable distance from the point of the magnet, as when they rest near the posterior pole of the eye. On the other hand, as he says, it is unhandy. Without having obtained the advantage of the enormous attraction of the giant magnet you have sacrificed the advantage of being able to hold a small magnet in your hand and place its point anywhere you want to on the surface of the eye.

As regards the conjunctival flap, many operators make an incision in the conjunctiva parallel with the one intended subsequently to be made in the sclera, and then push the conjunctiva aside until they reach the position in which they wish to enter the sclera.

In the particular instance I mentioned—and the same thing is done by some other workers—I made an incision parallel with the margin of the cornea and not very far from it, loosened the conjunctiva and held it well back to the position where I wished to enter the sclera, made a scleral incision, and then the point of the magnet was applied and the foreign body withdrawn. The conjunctiva, I believe, would have held a correct position without a stitch, but as I had made a fairly large incision I put one suture in the conjunctival flap. There was very marked bulging for a couple of days or so

after the operation, probably from protrusion of the vitreous through the wound and bulging at the lips of the scleral wound, but everything went along beautifully and the healing was very pretty.

The paper was not intended, of course, to discount the fact that the giant magnet is a very useful apparatus, and in some cases we could not get along without it. If a foreign body is away at the back part of the eye, in many cases it will be impracticable for us to do anything at all with the hand magnet. We cannot get close enough to the foreign body to obtain sufficient magnetic attraction to draw the foreign body to the point of the hand magnet. In that case you have to use a giant magnet with enormous attractive power, so as to draw the foreign body from a considerable distance.

Even in the presence of opacity of the lens I think some cases would have to be decided on their merits as regards the use of the hand or giant magnet. It would be desirable to get an exact localization of the position of the foreign body with the X-ray. If this were possible it would be much more favorable to make the scleral incision and use the hand magnet. Not in the majority of cases, but once in a while it is surprising how much opacity of the lens will subsequently clear up, leaving a rather slight opacity at the point of passage of the foreign body. I believe where the circumstances are favorable for using the hand magnet, even in these cases of opaque lenses, and where the eye is not badly mashed up, I should be in favor of giving the patient the benefit of the doubt and watching the case for some time afterwards, before actually removing the lens.

The factor of localization is one of tremendous importance. I believe if Haab had commenced to use magnets for the removal of foreign bodies in the eye quite a number of years later than he did, and had become familiar with the valuable use of the X-ray before having accumulated lengthy experience in the use of the giant magnet, he would not have been so strongly prejudiced against waiting to take an X-ray picture. He got so used to using his giant magnet, and did it on so many cases before the X-ray became available for this diagnosis, that I believe he has just about stood where he was and has not come up to the times as regards utilizing this very valuable method. It is really extraordinary with what delicacy a good X-ray man will localize foreign bodies.

News Notes

The recently-published list of Fellows of the American College of Surgeons contains the following names of Colorado men: Melville Black, R. W. Corwin, Leonard Freeman, T. J. Gallaher, W. W. Grant, C. F. Hegner, C. B. Ingraham, Jr., Edward Jackson, W. A. Jayne, S. F. Jones, Maurice Kahn, L. B. Lockard, Oliver Lyons, F. H. McNaught, G. B. Packard, C. A. Powers, C. E. Tennant and H. G. Wetherill. At the convocations in 1913 and 1914 about

2,000 fellowships were conferred and 1,900 applications are in the hands of the Committee on Credentials. Further applications for the charter member group are to be received until November 1, 1914, and successful candidates will receive their fellowships at the convocation to be held in November, 1914. Later fellowships will probably be obtained on the basis of examination.

At the meeting of the Colorado Medical Faculty in Boulder last June, a discussion was opened as to the system of examination for undergraduates. On the 29th of July a further faculty and clinical staff meeting was held in the Pipe and Bowl room of the University Club, Denver. The meeting was presided over by Dr. Farrand, the new President of the University of Colorado. After partaking of some disintegrated and reincarnated animal specimens from Dr. Whitman's vivisection laboratory, in the form of Wiener Wurst, and of some other delectable viands of the Dutch variety, a number of speakers discussed the topic of the evening. Dr. Edward Jackson argued in favor of the plan generally in force in the English professional examinations, by which an examinee is never examined by his own teachers, but always by representatives of other institutions. Apparently suffering from maldigestion of his "Wienies," Dr. Elder disgorged, not the Wurst, but several outbursts of humor in his brightest style; the main point of his talk being that the student should be studied throughout his course, and not merely in the final examinations. Dr. Sewall was rather frankly opposed to the examination of students by an examining board outside their teachers.

The third session of the postgraduate course in ophthalmology of the University of Colorado has just been completed. Four candidates successfully passed the examination leading to the degree of Doctor of Ophthalmology. They are Dr. Robert Fagin of Memphis, Tenn., Associate Professor of Ophthalmology in the Medical Department of the University of Tennessee; Dr. C. H. Dewey of Washington, D. C., ophthalmologist in the United States Indian service; Dr. J. M. Daly of Abilene, Texas, and Dr. G. C. Cary of Boulder.

It is reported that (shall we say after some years of careful consideration?) the trustees of the University of Pennsylvania have voted to admit women to the medical college of the university, beginning with the fall of 1914.

Among the special lecturers in the recent course on ophthalmology at the medical college in Denver was Dr. Nelson Miles Black of Milwaukee. During his short stay in Denver he was the house guest of Dr. Melville Black. In the evening of July 20th our visitor talked in the hall of the medical society of the City and County of Denver, on the spectral qualities of various tinted glasses used for the prevention of glare, especially among railroad men and for other industrial purposes. On the following afternoon he spoke on artificial illumination, and on the Ives test for visual acuity.

The American Roentgen Ray Society will

meet in Cleveland at the Hotel Hollenden on September 9th to 12th inclusive, 1914. The program includes a paper by Dessauer of Frankfort, on the subject of artificial production of gamma rays, as well as papers by Coolidge, the inventor of the Coolidge tube, Shearer and Duane. The subject of deep therapy and the production of the hard rays will be fully presented and discussed. The rest of the program will be taken up by a large number of papers on general subjects. The medical profession is cordially invited to attend these meetings.

The recently formed Colorado Association of Health Officers will meet in Boulder in September at the time of the meeting of the State Medical Society. Dr. Peebles was appointed as a committee to co-operate with the executive committee to arrange for a program of papers to be read on that occasion.

At the time of writing, Dr. Leonard Freeman, Dr. Kickland of Fort Collins, together with their wives and the other members of the "travel study" party which recently visited Europe in connection with the Clinical Congress of Surgeons, are among those Americans concerning whose prompt and comfortable return from Europe some doubt has been felt since the outbreak of war. Dr. Freeman is due to arrive in Denver about the 15th of August, so that by the time Colorado Medicine is published, he may appear in person to put our doubts at rest.

Dr. J. R. Arneill is traveling in Italy, so may escape trouble from the war. Although only a few hundred miles from what is likely to prove the active field of struggle, he will get the news no more promptly than the stay-at-homes, five thousand miles away.

Dr. M. Ethel V. Fraser and Dr. Elsie Pratt were to mountaineer in the Dolomites this summer, but with most of Europe in a state of war, they are likely to content themselves with independent little Switzerland.

Dr. W. H. Wilder, professor of ophthalmology at Rush Medical College, Chicago, has been staying with his family at Steamboat Springs, Colorado.

Dr. Melville Black recently went off in his automobile for a short fishing trip at Lehman's near Grand Lake. The doctor says that all he saw on the trip was mosquitoes and mud. Instead of dust he raised a cloudburst.

Dr. G. H. Stover is ejected back from his health tour some time in September.

Dr. G. W. Miel recently moved his office to 428 Majestic building, Denver.

Drs. Edward Jackson and W. H. Crisp, both active members of the Colorado Mountain Club, recently climbed Gray's Peak from Silver Plume, and at the time this journal appears will be away on a two weeks' camping and climbing trip with the club among the summits between Grand Lake and Estes Park.

Dr. G. F. Libby is back at work again after three months of rest and recreation in the East. He feels and looks in excellent health.

Dr. F. H. McNaught has of late been particularly happy in the possession of a new Hudson car. The doctor is said to have expressed

strong disapproval of psychotherapy when, on his first day out with the new toy, its front fender was somewhat severely dented by the backing of Dr. E. J. A. Rogers' car outside St. Luke's hospital.

Dr. A. J. Lanza, lately of the U. S. Sanatorium at Fort Stanton, N. M., (where the doctor says he was the only well man) has recently come to Denver to do special work on tuberculosis in the U. S. public health service.

Among the numerous decorations displayed in honor of the recent visit to Denver of a certain fraternal organization, of a somewhat convivial character, not the least appropriate was that on the walls of the Keeley Institute: "Welcome, B. P. O. Elks!" During the same convention the salutation "Hello Doc!" was particularly common on the street in the neighborhood of the Elks' hall at 14th and California streets.

Dr. May B. Kruse and her daughter, Dr. La Croix, are in Europe for a three months' tour.

The Professional Women's Club, which includes a number of the women physicians of Denver, has, through its individual members, joined the School League, in the hope of taking an active part in the improvement of school conditions in Denver. The Professional Women's Club has further called upon those of its members who travel this summer to bring home all they can learn concerning homes for defective children in other states. The material thus collected is to be used next winter in a movement for dealing with the problem of mentally defective children in Colorado.

Dr. J. D. Kessenger of Limon recently underwent an operation at St. Anthony's hospital for obstruction of the bowel.

Dr. W. W. Rowan of Ouray was delegate to the Democratic state assembly in Denver.

Dr. Edgar Hadley of Telluride was recently operated upon for hernia by Dr. S. D. Van Meter.

Dr. James Raizon of Trinidad died suddenly on July 15th.

Dr. F. W. E. Henkel, who for six years has practiced at Silverton, recently left in search of a new location.

Dr. Wilbur Lowe has moved from Eaton to Brush, Colorado.

Dr. F. B. Smith of Berthoud was recently operated upon rather hurriedly for hernia at the Longmont hospital.

Dr. E. D. McGill of Wray was recently shot and seriously wounded by D. C. Funk, a local contractor.

Dr. and Mrs. J. T. Beall of Rifle are away on a trip to Rochester, Minnesota, and to Chicago.

On July 14th Dr. F. N. Cochems of Salida gave the San Luis Medical Society an interesting talk on his recent visit to European clinics.

The medical world of Colorado was greatly shocked to hear of the tragedy which occurred at Glenwood Springs on the 21st of July, when Dr. T. L. Hutchinson, who had been doing eye, ear, nose and throat work in that town and surrounding territory, shot his two small daughters and then killed himself.

Dr. J. D. Hartley was knocked down by an

automobile during the Elks' celebration, but is now well on the road to recovery, and is back at his home, 1960 Logan street, Denver.

Dr. Edward Muggeridge has joined the ranks of the Benedicts.

Dr. James Waring has opened offices with Dr. S. G. Bonney in the Stedman building, Denver.

Dr. C. A. Powers returned to Denver on August 5th after a prolonged absence.

Dr. Frank Kenney is one of the wanderers in Europe who are expected home on August 15th.

Dr. J. H. Daniel, Iliff, is looking for a substitute for two weeks in September.

Pueblo Items.

Dr. H. A. Lord narrowly escaped a serious accident on July 4th, when his car stopped by the railroad tracks and then suddenly ran over him while he was cranking it.

Fifty-two rooms in the Thatcher building are now occupied by physicians and dentists.

Dr. Frederic Singer and family have been rusticating in the mountains above Rye for several weeks.

Dr. J. H. Woodbridge has lately returned from a two weeks' vacation.

Drs. W. O. Patterson and C. V. Marmaduke have announced themselves as candidates for coroner, subject to the Democratic primaries.

Dr. W. E. Buck was a delegate to the state Progressive convention in Colorado Springs.

Dr. H. A. Black has returned from Dallas, Texas, where he went as a delegate to the Rotarian assembly.

Dr. E. M. Maggard, who came from Denver a year ago, has opened offices with Dr. Dorland in the Central block.

Dr. W. L. Dorland is convalescing from an acute attack of Bright's disease and has been moved to his residence. He is receiving visitors.

Dr. W. T. H. Baker has been spending a part of his vacation with his family at Palmer Lake.

Dr. John Schwerer is able to be in his office, after undergoing an operation for appendicitis.

Drs. C. F. Taylor and Harlan Baker have returned from a post graduate course in Chicago.

Dr. Crum Epler has been holding an X-ray clinic at his office each Wednesday evening for the benefit of the members of Pueblo County Medical Society.

Fairmount hospital is to open a free dispensary. The clinic will be held once a week only, on Wednesday mornings from 8 to 10.

Dr. John G. Wolf as chief of department and Dr. H. B. Killough as medical officer, with a corps of very efficient assistants, are doing splendid work in the health board. Most effective work is shown in the results of milk inspection; 16 out of 27 dairies for the four months past show a bacterial count averaging 19,000 to the c. c.

There seems no doubt that Dr. Hubert Work will be candidate for United States senator on the Republican ticket.

Dr. R. H. Finney and family are spending their vacation at Stratton Park.

Dr. R. W. Corwin has been entertaining with weekly dancing parties at his residence.

Dr. J. I. McGonigle was one of the nominees for coroner at the Democratic county assembly.

Dr. J. E. Peairs was recently elected president of the Pueblo Commerce Club.

Drs. C. F. Taylor, W. F. Singer, J. E. Peairs, A. T. King, Hubert Work and F. E. Wallace were delegates to the Republican state convention held in Denver Aug. 4th.

Dr. Ray Taylor was nominated unanimously as candidate for coroner at the Republican county assembly, held July 31st.

At the same assembly Dr. F. E. Wallace was nominated as a candidate for the Legislature.

Constituent Societies

BOULDER COUNTY MEDICAL SOCIETY.

The **Boulder County Medical Society** met at the Hotel Boulderado, Thursday evening, June 11, at 7:30. Fourteen members were present.

The meeting was called to order by Dr. E. B. Queal in the absence of President Gillaspie.

A letter from the American National Red Cross Society was read. Dr. C. F. Wolfer moved and Dr. G. H. Cattermole seconded that the president appoint a Red Cross Committee. The motion carried.

Clinical Cases.—Dr. Snair presented a Mr. J., who had been presented fourteen months ago with a history of specific disease. He developed hyperchlorhydria. Drugs failed to give him relief. A diet of fat gave him some improvement. He developed a tape worm, which was removed. Recently he has had very severe headaches. He formerly had arrhythmia and tremor, the latter formerly very fine and now coarse. The headache produces a feeling of a band-like constriction about the forehead. The reflexes were all normal. He has had deep injections (muscular) of mercury, and has received as much as 60 grains of KI daily of late. Dr. G. H. Cattermole suggested a Wassermann from spinal fluid if the headache persists; Dr. E. C. Bennett suggested HgCl₂ for persistent headache in syphilis.

The paper of the evening was Dr. W. A. Jolley on "Medical Work in the Southern Coal Fields During the Past Winter."

Dr. Jolley's paper was discussed by Drs. G. H. Cattermole, H. A. Greene, E. B. Queal, Ira D. Scott, F. R. Spencer and A. W. Whitehouse.

Dr. A. W. Whitehouse of Fort Collins, formerly of Boulder, was the guest of the society.

The meeting adjourned to meet the first Tuesday in July.

F. R. SPENCER, Secretary.

The **Boulder County Medical Society** met Thursday evening, July 2nd, 1914, at the Hotel Boulderado. Ten members were present.

The question of laboratory demonstrations at the September meeting of the State Society was left in the hands of a committee consist-

ing of Drs. C. Gillaspie (chairman), Clay Giffin and A. R. Peebles.

The society voted to have the X-ray men, Drs. Wasson, Giffin and Robertson, give a demonstration at the September meeting of the state society.

The society voted to have members telephone items of interest concerning the profession to the secretary and to have him send these to Colorado Medicine.

The society voted to have the entertainment committee provide free passes to all automobile trips; details of which will be published later.

The society voted to request the city and county health officers to notify the public concerning the prevalence of whooping cough, its danger and prevention.

Dr. O. M. Gilbert reported a case of ruptured appendiceal abscess seen by Dr. W. W. Reed and himself. The central portion of the left lower lobe was involved and the patient had a cough with expectoration. The case was not one of ether pneumonia. The patient made a good recovery not only from the operation but also from the pulmonary infection, and left the hospital after ten days.

The society adjourned to meet on the first Thursday in August.

F. R. SPENCER, Sec'y.

Book Reviews

Infant Feeding. By Clifford G. Grulee, A.M., M.D., Assistant Professor of Pediatrics at Rush Medical College, Chief of Pediatric Staff, Cook County Hospital. Second Edition, thoroughly revised. Octavo of 314 pages, illustrated. Philadelphia and London: W. B. Saunders Company, 1914. Cloth, \$3 net.

This work, the first edition of which was reviewed in the August, 1912, issue, has been revised, and the advances made in two years, while not epoch-making, have been taken note of. A full consideration of breast and artificial feeding is preceded by a discussion of fundamental principles of infants' nutrition and followed by nine chapters on feeding and nutrition in various conditions such as "The Premature Infant," "The Exudative Diathesis," "The Spasmophilic Diathesis," "The Nervous Infant," "Feeding in Rickets," "Infantile Scurvy, Eczema, Congenital Pyloric Stenosis."

The teaching is essentially Teutonic. Devotees of Holt and of Rotch find scant comfort here while those mathematically inclined look in vain for those pages of formulae so repelling to the student. A four-hour feeding interval is insisted upon. Allen's recommendation that $1\frac{1}{2}$ ounces of whole milk to the pound weight be given in twenty-four hours is concurred in. "Lime water and sodium bicarbonate are unnecessary." Holt's statement that "it is the proteids which give most of the trouble to the infant's digestion" is challenged directly, and the author quotes with approval the opinion of Czerny and Keller that "protein is not respon-

sible for nutritional disturbances of any kind." In consonance with this teaching a normal 7-day-old baby is given six 3-ounce feedings made up of 9 ounces of milk and 9 ounces of water—a proteid percentage of $1\frac{1}{2}$ to 2!

The book is concisely written, without padding. Worthy of note are the illustrations of stools from various cases of indigestion. Directions for feeding are simple. The therapy is commendably brief. For anyone, and particularly one unfamiliar with continental teachings, the book will be most useful and worthy of study.

R. W. A.

Anatomy and Physiology for Nurses. LeRoy Lewis, M.D., formerly surgeon to and Lecturer on Anatomy and Physiology for Nurses at the Lewis Hospital, Bay City, Mich. Third Edition Revised Thoroughly. 12mo of 326 pages, with 161 illustrations. Philadelphia and London: W. B. Saunders Company, 1913. Cloth, \$1.75 net.

This book represents a conscientious and on the whole a successful attempt to state the essential facts of anatomy and physiology in simple language and in small space. The 161 illustrations are very well chosen and clearly reproduced, and are generally so placed as greatly to facilitate study of the text. Each of the thirteen chapters is followed by a carefully prepared list of review questions, well adapted for "quizzing." Although the book as a whole appears to have been well edited, it contains a few loose statements and some distinct errors which should have been avoided by thorough rereading of the text.

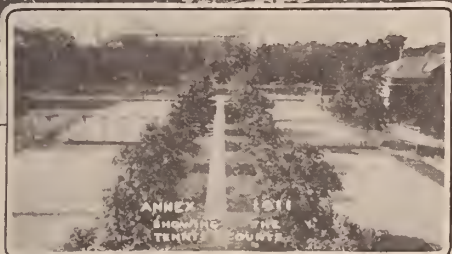
Hospital of the Protestant Episcopal Church in Philadelphia. Medical and Surgical Reports of the Episcopal Hospital. Volume 11. Philadelphia. Press of Wm. J. Dornan, 1914.

This well printed volume of 427 pages is divided into two sections. The first 114 pages are devoted to the usual hospital reports, attending and resident staffs, diagram and pictures of the buildings, etc. The balance of the book contains papers that have been written by the staff and based on work done in the Episcopal Hospital. During the year 1913, 5,319 new patients were treated; the average number of days under treatment was 20; the average daily number of cases under treatment, $376\frac{1}{2}$; the cost per day \$1.47 $\frac{1}{2}$. The tabulated reports are presented in a way that makes them valuable from a statistical standpoint.

Five papers are presented from the medical department, nineteen from the surgical department, seven from the ophthalmic, two from the aural and laryngeal, two from the pathological department, one obstetrical, five orthopedic, one dermatological, and one paper from the X-ray department.

The resources of the hospital must be ample to justify such a pretentious and excellent book. The staff is to be congratulated on the general high quality of the papers.

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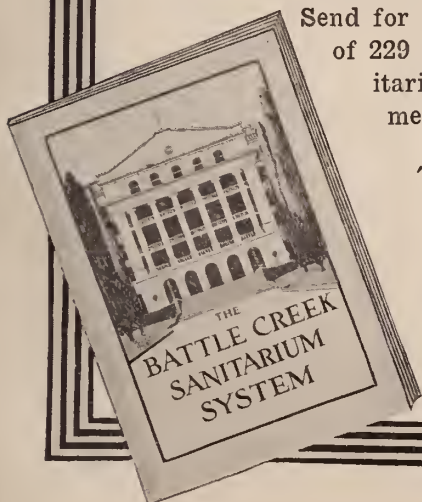
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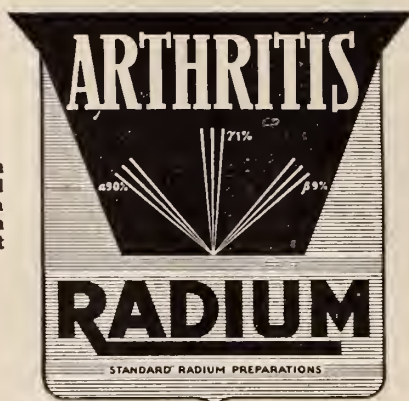
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NO. 9

Editorial Comment

A SUCCESSFUL MEETING.

The forty-fourth annual convention of the Colorado State Medical Society has to its credit an admirable program well conducted, three days of perfect weather, and a registration of 339 members and visitors, the largest attendance ever recorded in the history of our society. The retiring president and secretary, the committees on scientific work and on arrangements, and the Boulder hostesses, may all feel that their labors were rewarded by as successful a meeting as the Society has ever held.

On another page will be found a short report by the secretary as to the proceedings of the House of Delegates. Dr. Geo. B. Packard, the new president of the society, is at the same time president of the American Orthopedic Association. He has been chairman of the Denver County Medical Society, and for eight years acted as a member of the Colorado State Board of Medical Examiners. For the first time in the history of the state society the office of secretary has left Denver. Dr. Crum Epler, the new incumbent, was for several years secretary of the Pueblo County Medical Society, and in 1911 was president of the same society. Dr. W. A. Sedwick, who

succeeds Dr. Miel as treasurer, holds the same office in the Colorado Ophthalmological Society.

The very efficient services rendered by Dr. Melville Black as secretary, and by Dr. Miel as treasurer, for periods of nine and seven years respectively, were pleasantly commemorated by the raising of a subscription list out of which Dr. Black was presented with a silver afterdinner set, and Dr. Miel with a gold watch.

Next year's meeting will be held in Denver.

DR. WORK FOR U. S. SENATOR.

One of the most agreeable incidents of the Boulder meeting of the State Medical Society was the hearty applause which followed a reference to the fact that Dr. Hubert Work of Pueblo was in the lead for the Republican nomination as United States Senator from Colorado. The legal profession has always had a large representation on the law-making bodies of this and other countries. In view of the fundamental importance attaching to the proper administration of matters relating to the public health, it is regrettable that a greater number of medical men have not entered public life. With the rapid development of the preventive aspect of medical science and practice, it becomes

more and more necessary that the counsels of our legislators should be guided by men whose life training has rendered them expert in the problems which await solution. The advantages to be derived from Dr. Work's election to the senate will result, not chiefly to Dr. Work, nor to the medical profession, but to the people of this state and of the whole United States.

COLORADO'S MEDICAL LIBRARY.

We desire again to remind the members of the State Medical Society of the privileges they may enjoy from the Library of the Medical Society of the City and County of Denver. Not counting duplicates, this library has between 10,000 and 11,000 volumes of books and journals, something over 540 of which belong to the State Medical Society. All members of the Society have the privilege of borrowing books and periodicals, and those living outside of Denver may have these sent by mail or express, for a period to be specified in each instance, by paying the expense entailed in advance. The Library does not publish a catalogue, but references will be furnished on any subject, on application to the Assistant Librarian, 266 Metropolitan building. Applicants for books will be required to give a receipt, and no more than two books or three journals may be borrowed by the same person at the same time. As soon as can conveniently be arranged, Colorado Medicine will publish a list of books and journals belonging to the State Medical Society; and will also reproduce in full the rules of the library.

CARELESS QUOTATIONS.

Some time ago the editor of a medical journal published within a distance of one thousand miles from Denver received for

publication an essay which, on the whole, was rather well written. It contained a poetical quotation of some length, alleged to be from the pen of Rudyard Kipling. In some way or other the editor's suspicions were aroused. After a half hour or so of "original research" work in the central public library of his great city, he discovered that (as he had suspected) the poem was not by Kipling, that (according to the volume to which he traced it) the title of the poem was wrongly given, and that the form in which it was offered by the medical essayist for publication contained something like a dozen mistakes. The editor in question has been heard to remark that he hopes all future contributors will refrain from poetical quotation. We feel that this is an extreme point of view, but there could be no possible objection to an attempt on the part of essay writers carefully to verify their borrowed poetical gems before submitting them to the editorial eye.

THE ADVERTISEMENT CAMPAIGN.

A goodly number of national and state journals, among which is included Colorado Medicine, are waging a battle against unethical advertising. The American Medical Association has recently organized a Co-operative Medical Advertising Bureau whose object is to aid in this campaign by inducing manufacturers and dealers of the right kind to use the advertising columns of the ethical state journals. Several advertisements from this source have for some months been appearing in Colorado Medicine. For a movement of this kind to be successful it must be possible to demonstrate to advertisers that their matter receives attention.

Some of the advertisers use a key to the value of their advertising in the shape of coupons entitling the holders to free samples. The samples offered have a defi-

nite market value to some at least of our members, and readers can support Colorado Medicine by filling in and mailing the coupons referred to, or by sending for samples of all such products as they are able to use either in their practice or in the home—mentioning the fact that the advertisement was seen in this journal.

Original Articles

SOME OF THE PROFESSIONAL RESPONSIBILITIES OF THE PHYSICIANS OF COLORADO.*

O. M. GILBERT, M. D.
BOULDER.

The occasion of the President's Annual Address to the members of a State Medical Society is one which I conceive to be fraught with great responsibility. To my mind it should embody a consideration of those matters which most deeply concern the welfare and the responsibilities of the members of the society, both individually and collectively, and through them the people whom they serve.

These addresses taken together, should constitute one of the strongest guiding influences for our medical ship-of-state and should be a large factor in determining whether she is to sail in the path of scientific and humane righteousness to that high destiny which we have set for her, or whether she is to be wrecked on the Seylla or Charybdis of human vanity and shortsightedness.

Upon the ideals which we set for ourselves, is to be largely determined, whether we are to experience a continuance of the medical progress of recent years, or whether we are to re-experience the medical decadence of the "dark ages."

*President's address, read at the annual meeting of the Colorado State Medical Society, September 9, 10, and 11, 1914.

Having thus conceived my duty, you can understand something of the embarrassment under which I labor today, for no one understands better than I my absolute inadequacy to fulfill this requirement.

I have chosen for my subject, "Some of the Professional Responsibilities of the Physicians of Colorado."

It is with reluctance that one turns from the alluring field of the progress of medical science in the past few decades, for no one can recount the accomplishments of that period without a justifiable sense of satisfaction and of pride, but I deem it more important to consider some of the problems which yet lie before us.

I trust that what I may have to say about what we should be doing, will not be construed as an evidence of a lack of appreciation of the part that has already been contributed and is being contributed by the profession of Colorado to this onward march of medical science, for this has been no small part I assure you. But our attitude should be that of Sir William Osler, as expressed in a farewell address upon the eve of his departure from America to assume the duties of Regius Professor of medicine at the University of Oxford, when he said: "But when to the sessions of sweet, silent thought I summon up the past, not what I have done but the many things I have left undone, the opportunities I have neglected, the battles I have shirked, the precious hours I have wasted—these rise up in judgment."

First of all of these responsibilities, it is almost needless to say, is that of the making of the very best physicians and citizens of ourselves, that it is possible for us to make. Surely there is no land on the face of the earth, where the inspiration for noble achievements is greater than here in the shadow of these lofty mountains. Add to this that strongest of

all incentives; the call of suffering humanity, as we see it in this land to which the afflicted flock with the hope of restoration to health and of the chance to again enter into the joys and privileges of life, and I believe that we have a right to expect that many good things must come out of Colorado. Nowhere is the adage more applicable: "the harvest is plenty and the laborers are few." Not but what splendid routine work is being done, but I believe that we have not yet risen to an adequate appreciation of the measure of the responsibility which rests upon us. We have many "ten talent" men among us and the country looks to us for "ten talent" results.

That this section, as well as much more lying to the south and west of us, possesses great curative and especially preventative properties for tuberculosis, I believe no observing medical man who has practiced here can deny. Yet that the bases upon which these properties rest have not been sufficiently worked out and presented to the profession at large is apparent to all.

The opportunity for study of physiological and pathological processes as influenced by altitude, is unexcelled anywhere.

The Henry S. Dennison Laboratory on the Campus here in charge of Dr. Peebles, and the private laboratory of Dr. Gerald B. Webb of Colorado Springs, are excellent beginnings in the right direction, but are only a bagatelle compared with what should be in process of accomplishment.

The effect, particularly, of altitude and the associated climatic conditions upon the tuberculous process, constitutes an especially fruitful field for investigation. One of the keynotes to the situation seems already to have been struck by Webb and others in demonstrating the fact that with the increase in hemoglo-

bin, due apparently to an hyperplasia of the bone marrow, is an increase in the production of the nongranular mononuclear leucocytes. It has been shown that these leucocytes are rich in a lipolytic or wax-splitting enzyme, which attacks more or less successfully the tubercle bacillus. This work has been largely corroborated by several Colorado investigators, and last year Baer and Engelsmann, working in Davos, Switzerland, arrived at substantially the same conclusion, and furthermore substantiated our observation that the lymphocytosis found in high altitudes is almost identical with that found in low countries in people who have recovered from tuberculosis and thereby acquired a degree of immunity.

These observations will, I believe, be far reaching in their effects, but there is need for further corroboration and then a wider dissemination of these facts.

The work of the Anglo-American commission on Pike's Peak in 1911 is to be especially commended.

The chief results of their investigation were confirmation of the previous findings that the symptom-complex known as mountain-sickness was due to oxygen-hunger of the body cells and not to diminished mechanical pressure; and that there is an actual increase in red cells and hemoglobin and not merely in peripheral concentration, as has been claimed—although it is a fact that concentration of the blood is a large factor in the apparent increase of the first few days.

They furthermore determined that pulse-rate and blood pressure are only temporarily altered at high altitudes.

But most important of all was their establishing of the fact that the epithelial cells lining the alveoli of the lungs actually secrete and throw off into the blood large quantities of oxygen.

They conclude that the process of acclimatization depends upon the enormous

excitation of this process at high altitudes along with the lowering of the exciting-threshold of alveolar carbon dioxid pressure, in consequence of diminished alkalinity of the blood and the increase in red cells and hemoglobin, although the oxygen saturation of the blood is not so great as at sea level.

Then I believe most important of all is the opportunity for the clinical study of tuberculosis. Almost every physician in Colorado should be an expert in the diagnosis and management of tuberculosis. The advance which has been made in the past two decades in the early diagnosis of tuberculosis is enormously encouraging, but still the frequency with which a case is permitted to pass unrecognized through the really incipient stage, in which a cure is almost certain, is appalling.

We all know that it takes an almost inconceivable amount of work to acquire that degree of skill which enables one to recognize these cases at the earliest possible moment. In most instances this can not be done by physical examination alone; but a close study of the clinical history correlated with the physical findings, and especially in conjunction with the laboratory and Roentgen-ray aids, as well as the specific reactions, should lead us at least to strong enough suspicion to justify the proper steps being taken before it is too late—too late at least to get the best results.

Every time we see an advanced case of tuberculosis, the thought is inevitably forced in upon our consciousness: "This patient once passed through a curable stage; what a pity our knowledge and opportunities were not such as to enable us always to recognize the condition in that stage."

The pathos of this situation is borne in upon everyone of us almost daily, as we see a family of small children being

robbed of a mother or father, by a process which could at one time have almost certainly been checked, but which now can only be palliated.

Most of us believe, that the real inception of a case of tuberculosis dates back very, very much farther than has been commonly supposed; that the "run-down" period which almost always precedes the definite onset of the disease is of great significance, whether it be as is popularly supposed a period of lowered resistance in which some chance bacilli find lodgment and get in their work; or whether it represents an early and at present unrecognisable stage of the tuberculous process itself.

I am decidedly inclined to the latter opinion and I approach more and more closely to the view held by Hamburger and others; that we generally get our infection in childhood and that it remains to be lighted up at some opportune time. It therefore behooves us by every means at our command to throw all possible protection around this period of life.

First of all is the protection from exposure to the infection, and second the increasing of the bodily resistance so as to be able to combat the infection with which one almost inevitably comes in contact. It is doubtful if the latter factor is any less important than the former. In fact no less authorities than Welch and Hamburger have sounded a note of warning against too much emphasis on protection from infection and too little on raising of the individual resistance—even going so far as to regard a small amount of infection as possibly salutary, in that it tends to call forth the processes of immunity. However, both emphasize the fact that such infection is a two-edged sword, tending to produce sensitization at the same time that it tends to produce immunization; and which of the two edges will cut the sharper it is im-

possible to predict in our present state of knowledge.

Clive Riviere, at the recent medical congress in London, went so far as to recommend the feeding to infants and children of a definite number of bovine bacilli in their milk, in order to stimulate the process of immunization. This may be good, like David Harum's "reasonable number of fleas," but who is to judge as to the reasonableness of the number.

Under present conditions, I do not think we need fear that the children will fail to find sufficient infection for the purpose of stimulating immunity.

I will return to a consideration of tuberculosis in connection with our collective responsibilities.

I wish to pause a moment, in passing from individual to collective responsibilities, to emphasize the need of well organized team-work, especially in the smaller towns.

The field of medicine is now entirely too broad for any man to be efficient in all its departments, it matters not how brilliant he may be. It is therefore best, even in fairly small towns, that we get together and agree upon the line for which each man seems best fitted and let him concentrate along that line. He need not absolutely limit himself to that special department, but by bending his energies particularly in that direction, fellow practitioners will soon recognize his special ability and they will naturally seek his counsel or refer him cases of the especial character with which he is best fitted to deal. A complicated case thoroughly worked up by a group of men each working in his respective field, stands a far better chance of being properly diagnosed and treated than when handled by one who does everything. However, our combined fees must be kept within the limit of people's ability to pay.

I realize that our efforts in this direc-

tion are often at first misunderstood by our patrons and sometimes they do not take kindly to the idea, but they soon come to realize the increased efficiency attained thereby and then they are ready to co-operate most fully with us.

The splendid work of the Mayos and their associates serves amply to establish the fact that it is not necessary to live in a large city in order to do work of the highest merit. Starting in a little town of less than half the size of Boulder, they have built up a medical center which is unexcelled in the world.

But it goes without saying that to do this sort of team-work requires some unanimity of spirit, for we must often disregard absolutely our own interest when referring a most remunerative patient to a fellow practitioner for the simple reason that he is better prepared to handle it than we are. Furthermore, we have to rise above the unworthy fear that the other fellow will get all the glory out of the cure; or that to refer a case to a competitor will be construed as an admission that someone knows how to do something better than we do.

Again, while reciprocation is quite naturally and legitimately a consideration, it must not be the prime one, but the fitness of the man to handle the case must rise above all others. In fact, the whole crux of the situation is that we must make, as most physicians do, the best interest of the patient our absolute guide. It therefore follows that it is up to us to avail ourselves of the splendid medical and surgical clinics of the world, as well as to delve deeply into the mine of medical literature of the day.

It is not sufficient for a man simply to agree to limit his work to a special department, and then to send all other classes of cases to those doing work in other special departments, and expect referred cases in return. No! he must

prove to his associates that he is properly equipped to handle these cases.

Of course all this implies work—hard work. That, however, as Sir William Osler has so beautifully shown, is “the Master Word in Medicine.” Of it he says: “Though a little one, the master-word looms large in meaning. It is the open sesame to every portal, the great equalizer in the world, the true philosopher’s stone, which transmutes all the base metal of humanity into gold. The stupid man among you it will make bright, the bright man brilliant, and the brilliant student steady. With the magic word in your heart all things are possible, and without it all study is vanity and vexation. The miracles of life are with it; the blind see by touch, the deaf hear with eyes, the dumb speak with fingers. To the youth it brings hope, to the middle-aged confidence, to the aged repose. True balm of hurt minds, in its presence the heart of the sorrowful is lightened and consoled. It is directly responsible for all advances in medicine during the past twenty-five centuries. Laying hold upon it Hippocrates made observation and science the warp and woof of our art. Galen so read its meaning that fifteen centuries stopped thinking, and slept until awakened by the *De Fabrica* of Vesalius, which is the very incarnation of the Master Word. With its inspiration Harvey gave an impulse to a larger circulation than he wot of, an impulse which we feel today. Hunter sounded all its heights and depths and stands out in our history as one of the great exemplars of its virtue. With it Virehow smote the rock, and the waters of progress gushed out; while in the hands of Pasteur it proved a very talisman to open to us a new heaven in medicine and a new earth in surgery. Not only has it been the touchstone of progress, but it is the measure of success in every-day life.”

Standing in close relationship to the team-work which we have been considering, is the medical society.

Few influences have been more potent during the past two decades, in bringing the practice of medicine up to its present high standard, than the Medical Society. There the best that is in us is stimulated, while our petty differences, which are so unworthy of our high calling, soon sink into oblivion. There we give freely and gladly of the kernels of knowledge which we have garnered from the fields of our best endeavors.

It is one of the noblest traditions of the profession that its members freely and unreservedly give to the profession, for the good of mankind, the benefits of any medical discovery or advancement that they may make. He who fails to do so is regarded in the same light as Ananias and Sapphira who, you remember, were under an implied obligation to cast all they possessed into the common lot, since all drew from the common lot.

So it is in medicine: all draw from the accumulated fund of knowledge of the ages and are under like implied obligation to withhold no part or parcel of that of which perchance they might have fallen into possession. Furthermore, I hold that he is only slightly less guilty, who makes no serious endeavor to advance the science upon which he is drawing during all his professional career.

Among the most important of our collective responsibilities is that of securing proper medical legislation.

I believe that there has been entirely too much special and indiscriminate legislation on medical matters. At the last session of the California legislature for instance, thirty-nine bills were introduced which had to do in part or in whole with medical or health affairs. I believe that much would be gained by the repealing of about two-thirds of the laws of this

nature which are now on the statute books, followed by the creation of a new body entitled the "Department of Public Health," with duties and powers well but broadly defined, which could deal efficiently with many of the affairs which are now dealt with so inefficiently by special acts. What reason is there, for instance, for special laws dealing with spitting in public places, regulation of contagious diseases, common drinking cups, garbage disposal, hotel inspection, ophthalmia neonatorum, railroad sanitation, and vaccination? Could not all these and many others be properly included in the functions of a "Department of Public Health?" Our "Board of Health" as it now exists is little more than a farce—especially since it is provided with no funds to carry on its work. Furthermore, I believe that the duties now performed by the "Board of Medical Examiners" could much better be performed by this proposed department. That would do away with the only vestige of reason for each medical sect clamoring for a board of its own. Of course, we understand that the word "medical" applies to the art of healing in general, and courts have almost uniformly so construed it, but we have never succeeded in getting the people and the legislators to dissociate it in their minds from drug-giving. As evidence of this, note the excellent "Practice Act" now on our statute books and then see it almost wholly nullified by a clause at the end which states that it does not apply to certain sects, nor to any others who do not give drugs internally. The result is that there are numbers of unqualified persons who are assuming the responsibility of diagnosing and treating the most serious diseases, and many a life is lost thereby; yet the people have no protection against them.

It is just as illogical to have a separate examining board for each sect that

chances to have an individual method of treating diseases, as it would be to have a separate law-examining board for each group of lawyers who chance to have a distinct notion of how the laws should be administered. But in the case of law the courts say, No! the principles of law are fundamental; prove to us that you have an adequate understanding of these fundamentals and we will trust you to plead your cases as you may see fit.

The socialists, for instance, have a radically different conception of law from that held by most people, yet no one has been so bold as to demand that there be created a separate examining board for those lawyers who hold to this theory of government.

The principles involved in the practice of the healing art are identically the same. The fundamentals upon which this art is based are an understanding of the anatomy, physiology and physiological chemistry of the human body, together with the disorders to which it is subject. Is there room for any great difference of opinion in regard to these? On the other hand, there is a great deal of room for difference of opinion as to how these disorders may best be remedied, and anything that would hamper the legitimate exercise of practice based upon these opinions would be retrogressive in its effect.

But common sense attests and experience has proven that where one is well grounded in the fundamentals mentioned, he can be trusted to apply the remedy as he may see fit.

Let us assume that a new-fangled engineer comes along and requests of the railway officials the privilege of pulling a trainload of people through to Chicago by a new and short-cut method, requiring no track, no bridges, no compass, no safety valves, but an extraordinary amount of steam. Would the officials say: Well, it

doesn't seem very logical to us, but go ahead and try it; people don't have to ride on your train unless they want to. Would they not rather say, feeling the responsibility for the lives of their people, as the state should for its people: First you must go before our board of competent mechanical engineers and prove to their satisfaction that you understand the engine that you propose to run and the conditions under which you propose to run it. But, replies the new engineer, I don't propose to be examined by those old fogey engineers; they don't understand my conception of mechanical principles. I want to be examined by a board of my own kind, otherwise it will not be fair. The response of the railway officials is obvious, is it not?

However, all this implies the creation of a "commission" which is absolutely nonsectarian and beyond even the suspicion of reproach. I suggest that the "Department of Public Health" shall consist, as in the new Massachusetts law, of a Commissioner of Health and a Public Health Council. The Commissioner of Health should be a sanitary expert of recognized ability, should devote his whole time to his official duties and should be the administrative head of the department. The Public Health Council should consist of the Commissioner of Health and six councilors. The council should be the legislative body of the department and should meet at least once a month, and oftener if necessary. They should be paid per diem for time actually consumed in their official capacity, and at least one of them should be a sanitary engineer of skill and ability. The state should be divided into three or four districts, with a full-time district health officer over each, who should be a trained sanitarian and should be under the direction of the Public Health Council.

Many of the mistakes of past medical

legislation have been due to regarding the matter from a sectarian rather than from an educational and sociological point of view, and to not placing the matter before the people and the legislators in such a way that they could understand that it was the people and not the medical profession who need protection. It is a fact well known among physicians, that unqualified persons dabbling in practice make far more practice for reputable men in the long run than they ever take away from them.

Let it here be distinctly understood that no fair-minded physician objects, as is commonly believed, to the practice of any of the irregular methods of healing. In fact, they recognize most decidedly that there are grains of truth among the chaff of the most of the methods, but what they do most emphatically insist upon is that the practitioners of such methods shall be required to know very accurately the machine which they are attempting to run, so that they shall not, on account of their ignorance, be a menace to the health and lives of the people. That the people cannot be expected to judge between the qualified and the unqualified is apparent to any physician.

The Public Health Department must of necessity be closely correlated with the county and municipal health organizations—in fact, there must be an efficient organization right down the line. We can learn much from the effective organization of our big business concerns. We can also learn much from the European countries in this respect. In Germany especially, smallpox and typhoid fever have been almost wiped out of existence by a thorough health service.

All this naturally necessitates that such a department be removed from politics and that we rise somewhat to the Old World conception of public service.

In making this recommendation for a

"Public Health Department," with such a broad scope of duties, please do not understand that I assume that all of the affairs of the state which have any bearing upon health problems can best be administered by such a department, although there should be co-operative action with this department in all such affairs.

In this state the necessity for proper provision for the care of the indigent sick and particularly those persons who are afflicted with communicable diseases, including tuberculosis, would amply justify the passage of a hospital law somewhat along the lines of that passed two years ago by the state of Texas.

According to its provisions, each county may provide and each county having a city of 10,000 population must provide a county hospital, and in the latter case, they must also provide special buildings for those afflicted with contagious diseases and for tuberculous patients. To these hospitals any resident of the county, rich or poor, is to be admitted, but the board of managers, appointed by the county commissioners, determine whether the patient is able to pay in part or in whole for his maintainance.

Naturally the question arises, should we not be overrun by short-term residents; or in other words, might we not be made the dumping ground for the rest of the country? This theoretically might be the case, but as a matter of experience it has never proven to be true. No community has ever yet been shown to have lost a dollar in the long run by making judicious provisions for the restoration of its sick people to a state of health.

Furthermore, it would be far more economical for the community to provide a proper place for these unfortunates than to have them scattering infection about the country. Newsholme of England, as a result of his exhaustive study of the

spread of tuberculosis, came to the conclusion that the most important factor in its control was the proper care of advanced cases, so that they might not be a menace to others. So from the standpoint of public health, it matters not whether their residence has been long or short; they are here and should be provided for. However, it would be perfectly proper, where facilities are limited, to give citizens of the county priority. I am informed that this plan is working out highly satisfactorily in Texas.

We are everywhere rising to a higher conception of the responsibility of the state for those who are deprived of that greatest of all assets—health. This, however, does not carry with it any notion of the state practice of medicine. To my mind, every form of "state" or "contract" practice is demoralizing both to the doctor and to the patient. It robs both of that element of independence which is so essential to the proper relationship between the two, and therefore to the performance of our highest duty. I made a considerable study of this subject both in England and in Continental Europe, and I came back firmly convinced that, while under industrial conditions such as exist in those countries, state practice is possibly the lesser of the two evils, it would be the worst that could befall a country like ours, and I resolved to do all in my power to warn our people of its dangers, that we might, if possible, prevent its invasion into this country, or if it must come in some modified form, see to it that it is robbed of its most menacing features.

"Workmen's Compensation Acts" which carry with them the responsibility on the part of the employer for medical services for a certain period of time, are being tried in Massachusetts, Wisconsin, California and several other states, and in most instances are proving fairly satis-

factory so far, because they carry with them the privilege of choice of physicians and payment according to services rendered. These are two of the most fundamentally necessary provisions for acts of this kind. But already these features of the acts are being attacked, the employers contending for the right to employ physicians on a salary to attend their employés. This will almost inevitably lead to the employing of mediocre men, burdening them with an excessive amount of work and imposing upon them other conditions which would be incompatible with the highest character of service. I very much fear that this is the opening wedge for this most pernicious evil. I know that there is much to be said in favor of an arrangement by which one can pay his doctor bills in monthly payments while he is well, instead of incurring a debt while ill that will burden the family for a long time afterward.

No less a student of medical sociology than Richard C. Cabot believes that there is much to be said in favor of the "salaried practice of medicine," and that the advantages of it may be enjoyed without the disadvantages which are experienced in Germany and England. He and Philip Mills Jones of San Francisco believe that it is up to the medical profession to initiate this movement, and to see to it that it is started right, rather than having it thrust upon us in an undesirable form, as has been the case abroad.

But I think that these advantages are far more than outweighed by the evils which seem inevitably to accompany this form of practice.

One of the most potent of these evils, aside from the relationship between physician and patient mentioned above, is the inadequate compensation with its natural corollary, poor service, which seems always to go with contract practice of any kind. A letter from Sir Lauder Brunton,

in response to an inquiry, says that he regards all forms of contract practice as demoralizing.

I asked a physician in the north of England how he could possibly make a living at such prices, and he replied: "Simply by doing an enormous amount of very poor work. I have often made as high as seventy calls a day, and you know what sort of work that means."

Let me here add a word of warning. The thing which will tend most to hasten this condition upon us, undesirable as it is, both for physician and patient, is the tendency which exists in many parts of the country to charge exorbitant fees for services. A letter from Cabot states that he believes that this will be one of the most potent influences in bringing about "state practice."

I hold that the enormous fees commanded by men in other walks of life are no excuse for us. I hope I may not be understood as being an advocate of low fees, for it is to the patient's best interest as well as that of the physician, that he charge sufficient for his services to enable him to secure the best of equipment and literature, keep in touch with the best clinics of the world and provide well for his family.

I am glad to say that these charges of extortion have seldom been made against any of our Colorado physicians. Let us hope that the deadly germ of avarice will never gain a firm hold in our profession.

The interruptions in the onward march of civilization have always been caused in large part by greed and selfishness; let there be no interruptions in the onward march of medical science.

Rather let us merit well the professional heritage which has been handed down to us by the masters in medicine, and leave to those who may come after us a record of service which will live long after the cloak of oblivion has been cast over us.

ON SOME RECENT CONTRIBUTIONS IN THE FIELD OF MICRO- BIOLOGY.*

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Mr. President and Members of the Society:

Permit me to express my sincere appreciation of the great honor which your distinguished society has conferred upon me by inviting me to present before you an account of some of the recent events in the domain of microbiology.

The subjects to which I wish to draw your attention this evening are rather diverse, and they have been selected, not alone because you have assigned them to me, but also because, though superficially unconnected with each other, they are nevertheless closely correlated from a certain point of view, namely, that of the question of cultivation. Thus, I shall speak of the cultivation of various pathogenic and saprophytic spirochaetes and of that of the viruses of rabies and poliomyelitis, and finally on the relation of *Treponema pallidum* to the so-called parasymphilitic conditions. The point of resemblance that I find to exist between these subjects is that none of these organisms were hitherto successfully cultivated. In order to overcome this obstacle it was necessary to work out certain specialized techniques of cultivation. The only justification for bringing in the subject of syphilis and parasymphilis in this connection is the fact that the demonstration of *Treponema pallidum* in general paralysis and tabes was an incident in the cultural studies of the organism of syphilis, and it seems to me not unpardonable to dwell upon this particular subject inasmuch as the practising physician comes into fre-

quent contact with these conditions in his daily discharge of duties.

Before entering upon the individual topics a few general remarks on the cultivation of these micro-organisms may not be amiss. The task of cultivating spirochaetes, especially the pathogenic varieties invading the tissues and blood, was a problem of long standing, and the undisputed proof of this achievement having been definitely effected was not forthcoming until 1911-1912, when not only *Treponema pallidum* of syphilis and *Treponema pertenue* of yaws, but also the well-known blood spirochaetes of relapsing fever (*Spirochaeta obermeieri*), tick fever (*Spirochaeta duttoni* and *Spirochaeta kochi*) and of fowl spirochaetosis (*Spirochaeta gallinarum*), together with several species of a saprophytic nature were obtained in pure cultures.¹ A lesson was learned from these findings, namely, that the micro-organism which had hitherto proved resistant to artificial cultivation could be made to continue multiplying for an indefinite period of time, outside of the animal body under a suitable combination of cultural conditions. It was also shown that success in the cultivation of this class of organisms is often inconstant, and that much patience and experience are necessary to bring about the desired result. Not infrequently a sudden and sometimes an early loss of virulence was noticed to occur in the organisms under cultivation. Luckily the characteristic morphology of spirochaetes renders the identification of the culture possible even if the latter should suffer as regards its pathogenic property.

From what has been said it is easy to assume that the possibility exists of working out various combinations of conditions suitable for obtaining a culture of some of

* Read before the Annual Meeting of the Colorado State Medical Society, Sept. 9, 10 and 11, 1914.

¹For the chronological and technical details on the cultivation of these spirochaetes I refer the reader to the references appended to the end of this address.

the infective agents whose existence has been recognized only through their pathogenic behavior in man and animals. To this class belong the viruses of rabies, poliomyelitis, hog-cholera, variola, vaccinia, various contagious exanthemata, yellow fever, etc., most of which are known as filter-passers. It seemed opportune to make a fresh attempt with specialized methods after we had learned that spirochaetes, once so difficult to grow, were amenable to cultivation.

The advantages which are offered by the pure culture of a given micro-organism in studying its biologic and morphologic characteristics need not be emphasized. But one is apt to overlook a peculiar advantage which a pure culture may present in the case of certain micro-organisms. I refer to the peculiar morphological modifications which some protozoan organisms are apt to undergo; for example, the rosette formation of trypanosomes or the assumption of the flagellate form of a *Leishmania* in artificial cultures. Nor should we overlook a possibility of encountering certain unfamiliar forms in a culture when dealing with organisms whose biological and morphological features in natural habit are only imperfectly understood. As an example of the latter phenomenon I wish to refer to the granular forms of spirochaetes. Leishman, Balfour, Nuttall, Hindle and others, have pointed out the presence of such forms in the infected blood or in the bodies of ticks infected with *Spirochaeta duttoni* as well as *Spirochaeta gallinarum*, and I myself was able to demonstrate similar granules in the pure cultures of *Treponema pallidum*. This phenomenon, however insignificant it may appear in itself, was destined to give a key to one of the most disputed problems of the past fifty years, namely, the problem of so-called parasyphilis, since it was this very idea that prompted me to undertake the search of

Treponema pallidum in one form or another in the brains of general paralytics and in the spinal cord from cases of *tabes dorsalis*.

According to the view I now hold spirochaetes may be classified into three groups according to the conditions under which they can be cultivated on artificial media. Thus (1) the spirochaetes which chiefly invade the various tissues require the presence of fresh animal tissue as well as of suitable nutritive substrat and strict anaerobiosis. (2) The blood-residing varieties also require the presence of fresh animal tissue and a suitable nutritive substrat, like the first group, but they cannot grow unless a minute quantity of oxygen is provided. (3) The saprophytic varieties resemble the first group in most respects, but the presence of fresh animal tissue is not essential for their growth and their adaptation to artificial media is comparatively much easier. To the first group belong *Treponema pallidum* and *Treponema pertense*; to the second, *Spirochaeta duttoni*, *Sp. kochi*, *Sp. Obermeieri*, *Sp. novyi*, *Sp. gallinarum*; and to the third, *Treponema macrodentium*, *Treponema microdentium*, *Tr. mucosum*, *Tr. calligyrum*, *Sp. refringens*, *Sp. buccalis*, *Sp. vincenti*, *Sp. phagedenis*, etc.

Referring to the viruses of rabies and poliomyelitis I wish to say that the cultural conditions required by them are found to closely resemble those necessary for the growth of the pathogenic spirochaetes (including the first and second groups). They are likewise extremely fastidious as regards the sources and composition of the culture media.

In the following paper I shall present (1) a review of the cultivation of *Treponema pallidum*; (2) an account of the experiments in connection with the cultivation of the virus of rabies; and (3) the etiology of so-called parasyphilitic conditions.

I.—The Cultivation of *Treponema Pallidum*.

Since Schereschewsky in 1909 announced that he had succeeded in cultivating from human syphilitic tissues certain spirochaetae in an impure state, believed by him to be *Treponema pallidum*, there have appeared a number of contributions on the same subject from various sources. Up to the present date we count at least ten investigators who claim to have obtained pure cultures of *Treponema pallidum*—Mühlens, W. H. Hoffman, Noguchi, Sowade, Arnheim, Tomaszewski, Shmammine, Nakano, Baeslaek, and very recently also Schereschewsky, and three others who obtained only impure growths, namely, Bruckner, Galaseseo and Boas.

The culture media employed by the different investigators may be divided into three main groups, namely, (a) solidified serum of horse or other animals (Schereschewsky, Mühlens, W. H. Hoffman, Tomaszewski, Sowade, Nakano, Shmammine, Bruckner, Galaseseo and Boas); (b) serum water with fresh animal tissue* (Noguchi) and (c) ascites-agar with fresh animal tissue (Noguchi). Of those who employed Schereschewsky's medium Shmammine modified it by adding a small amount of sodium nucleicium and Nakano peptone-agar.

The sources of the materials were various. Thus, Schereschewsky, Sowade, Tomaszewski, Arnheim, Bruckner and Galaseseo employed exclusively or mainly human syphilitic tissues, while Mühlens, Hoffman, Shmammine, Nakano and especially Noguchi, experimented with the human as well as rabbit's syphilitic tissues. It is important, however, to notice that Mühlens and others reported one success from rabbit strains, while Noguchi obtained six pure strains from ten different sources.

*The anaerobic principle introduced by Th. Smith.

Cultivations were carried out by all except Noguchi without strict anaerobic precaution. Thus it is evident that the strains of spirochaetae cultivated by the former investigators are able to multiply and maintain their existence for many generations in a semi-coagulated horse serum. The spirochaetae isolated by Noguchi differed from theirs in not being able to exist without the fresh tissue constituent as well as the complete exclusion of oxygen.

Noguchi made the distinction that his serum-water method is exclusively for the cultivation of rabbit's strains in testicular lesions, while the ascitic agar tissue medium is suitable only for the impure materials derived from human syphilitic cases. He found that the human strains cannot be cultivated in the first-mentioned medium and the rabbit strain does not develop in the first generation in ascitic agar tissue or any other medium so far known (including Schereschewsky's medium with or without addition of fresh sterile tissue). This fact has been confirmed by Tomaszewski.

As regards the morphology of the spirochaetae cultivated by different investigators, they admit that the cultures contained both fine and coarser forms, especially when derived from human sources. Schereschewsky as well as Mühlens, Shmammine and others, noticed this fact. Mühlens believed that the two forms are different varieties, while Schereschewsky and Shmammine considered them to be one and the same variety developing under different conditions. Noguchi endorsed the view held by Mühlens.

The first successful production of syphilitic lesions in animals by means of pure cultures was reported by Noguchi (1911) who, using two strains derived from the rabbit's syphiloma in testicles, caused typical testicular lesions in several rabbits; next by Hoffman (1911), Sowade, Shmammine (1912), and Nakano (1912), while

Bruekner and Galasesco in 1910 reported one success in the rabbit by means of their impure material (third generation). Tomaszewski (1912), as well as Sowade (1911), also succeeded in infecting rabbits with their impure cultures derived from human materials. Moreover, Noguchi (1912) produced typical sclerotic skin lesions on the eyebrows of several monkeys (*macacus* and *cercopithecus*) by means of pure cultures derived from human syphilitic tissues. The virulence of this organism disappeared in about four months after cultivation, while the other biological properties remained, according to Noguchi, unmodified even after nearly three years.

Fundamental discrepancies regarding the biological properties of the organism cultivated on the one hand by Mühlens and Hoffmann and on the other by Noguchi exist. That of the former produced a putrefactive odor and multiplies not only in horse serum agar almost up to the surface, but also in plain agar and bouillon for some generations in the presence of oxygen, while that of Noguchi grows only under strictly anaerobic conditions in the presence of fresh sterile tissue and never produces a disagreeable odor. In spite of prolonged artificial cultivation Noguchi's spirochaetae do not grow in Schereschewsky's horse serum or plain agar or bouillon. These differences were pointed out by Noguchi in his first publication. Later he demonstrated that certain mouth spirochaetae (*Treponema microdentium*, *Treponema mucosum*) presented in pure culture morphological features indistinguishable from *Treponema pallidum* but produced a characteristic putrefactive odor accompanied by alterations of the culture media, not unlike that described for the organism of Mühlens and Hoffmann. Tomaszewski, Arnheim, Shmamine and Nakano noticed no odor in their pallidum cultures. The culture of Mühlens, which was devoid

of pathogenicity from the beginning, and that of Hoffmann are quite different from that of Noguchi and the later investigators. At least it is not improbable, as pointed out by E. Hoffmann, that the successful production of syphilitic orchitis in a rabbit by W. H. Hoffmann may have been due to the use of an impure culture of the pallidum containing a foreign odor-producing spirochaeta or some organism.

The recent studies of Noguchi on *Treponema calligyrum*, a species occupying an intermediary position between the pallidum and the refringens, found in non-luetic lesions of human genital regions, also indicates the difficulty of identifying a spirochaeta resembling the pallidum in cultures derived directly from human syphilitic tissues. The calligyrum grows much more readily in several media (including the horse serum and serum agar without fresh tissue) and can easily be mistaken for pallidum. The calligyrum grows like the pallidum and produces no odor or alteration of the media. It differs by lacking pathogenicity and by appearing in non-specific lesions, and also is slightly coarser. The non-pathogenic spirochaetae that are readily cultivated in ordinary serum-agar or coagulated serum belong to this group, although the pallidum may possibly grow symbiotically in association with the calligyrum. In such an instance the culture might be pathogenic but not pure. For this reason Noguchi considers it absolutely essential, in order to obtain a pure strain of pallidum, that pure material, such as represented by the syphiloma of rabbit's testicles, be utilized for the purpose of cultivation. In a culture in which the pallidum is associated with the calligyrum, refringens, microdentium or mucosum it is easy to eliminate the pallidum in future culture generations by withdrawing the addition of the fresh tissue and neglecting strict anaerobic

precautions, but the reverse cannot be accomplished.

Stress has been placed upon the antigenic property of the cultivated spirochaetae in relation to the Wassermann reaction by certain investigators, but confusion of this reaction with that of a true antigen-antibody reaction is to be avoided. An emulsion of rabbit's testicle rich in pallidum or a pure culture of pallidum does not bind complement with most of the sera from early cases of syphilis, although they give a positive reaction more frequently in latent or tertiary cases. In latent or tertiary cases the reaction is, according to Noguchi, specific and can be sharply separated from the Wassermann reaction by parallel series of tests. The results are different when an alcoholic extract of the pallidum contained in tissue or cultures is used, since they are now due to the lipoidal constituents from the tissue as well as culture mass. Under these circumstances they may parallel the Wassermann reaction.

The sera of rabbits highly immunized with the pure cultures of pallidum contain specific agglutinine and complement binding anti-bodies (Noguchi, Kolmer, Williams, Laubach and Nakano), while the skin of the immunized animals shows a state of hypersensitiveness to the pallidum extract (Noguchi). But the skin of rabbits, with active syphilitic orchitis, does not react distinctly. A hypersensitiveness of the skin was shown to occur in syphilis by Neisser, Meierowski, Jadassohn, Nobl, Finger, Landsteiner and others, and Noguchi has made its detection more constant by the employment of an extract of several strains of pure pallidum cultures which had been killed by heat and then ground up. The clinical application of this procedure brought forward by Noguchi (the luetin cuti-reaction) has been confirmed by Orleman-

Robinson, Wolfsohn, Nobl and Fluse, Kämmerer, Rytina, Gradwohl, Simpson, Fagioli and Fisichella, Geber, Schmitter, Foster, Kaliski, Cohen, Baermann and Heinemann, Benedek, and others.*

On the other hand Schereschewsky, using his impure cultures, and Nakano, using a filtrate of his culture, obtained indefinite results.

From the above brief review, in which technical details have been intentionally omitted, the following may be deduced:

The cultivation of *Treponema pallidum* has undoubtedly been accomplished, but the methods available at present still give inconstant results. When impure cultures from any human syphilitic material are obtained, the proof of the pallidum is derived from successful animal inoculation: when, however, no pathogenic power exists it is impossible to affirm the presence of the pallidum. Even when derived from human sources the cultures of spirochaetae cannot be established to be pure pallidum cultures, because other morphologically similar spirochaetae may be present. What can be stated definitely is that the pure pallidum cultures do not cause putrefaction; and that any cultures containing pallidum-like spirochaetae, giving rise to odor and yet pathogenic, must be regarded as impure. Should putrefaction be caused and the culture be non-pathogenic there is no way to establish its pallidum nature.

From the foregoing I deduce the following:

The first strict proof of the pure cultivation of *Treponema pallidum* was brought in 1911 by myself. To accomplish this end a specially devised anaerobic method was employed. Later investigators have secured growth of a pathogenic pallidum by simpler methods of cultivation; but certain proof of all exclusion of

*A bibliography on this topic is appended at the end of this article.

allied saprophytic species has not, in my opinion, been brought by them.

II.—The Cultivation of the Virus of Rabies.¹

In my previous communications it was pointed out that the virus of rabies may be cultivated for many successive generations without losing its specific virulence, when optimum conditions for its growth are provided, and that in such cultures one always finds a variable number of minute granular chromatin bodies as well as occasional pleomorphic elements. It was also stated that in very rare instances peculiar round or oval bodies resembling a uninucleate organism make their appearance for a short time. This last phenomenon was observed only four times within eighteen months, during which period at least fifty series of attempts at cultivation of the virus were executed. In order to emphasize the rarity of the phenomenon it may be well to explain the extent of the work. Each series of experiments is carried out in twelve tubes, each containing a piece of fresh tissue and the virus, six control tubes provided with fresh non-rabie tissue, and one tube containing salt solution or bouillon as well as the virus. Of these tubes each set of four tubes received the same specimen of ascitic fluid of which there are three different specimens² to be tried. Each two tubes of the control set also receive one of the three different ascitic fluids in turn. After the distribution of the ascitic fluid (10-12cm deep) one half of the tubes are covered

with a layer of sterile paraffin oil and then placed in the thermostat at 37°C.³ Microscopical examinations are made every three days until about ten or twelve days have passed, after which the cultures may be examined less frequently. A transfer is made into new tubes on the 7th and 12th days. The second and subsequent generations so prepared are likewise controlled by periodic microscopical examination. For the determination of virulence rabbits and guinea pigs, and occasionally dogs, are inoculated intracerebrally or intra-muscularly, or sometimes intra-ocularly, with the cultures at different periods of cultivation. For the microscopical examination of cultures a minute quantity of the fluid is drawn from near the bottom with a sterile pipette and spread on a slide, air-dried, fixed in methyl alcohol for 30-60 minutes and then stained with the diluted Giemsa solution (1:10) for one to two hours or sometimes overnight.

For the purpose of cultivation both an emulsion and an untrituated piece of the brain (rabbit, guinea pig or dog with rabies was used), but as no success was obtained with the former the latter was used exclusively in the majority of experiments. In transferring the cultures from tube to tube only the fluid around the tissue is taken, although in the first generation a small particle of the brain substance may be contained in such fluid. The amount of the fluid transferred in each generation is 0.5 cc. to 10-12 cc. of the new media.

The general plan of cultivation having been stated, I will now discuss the results which have been obtained. Out of eighty series (carried on since 1912 up to date) nine series were discarded on account of accidental bacterial contaminations. Of the remaining seventy-one there was no growth whatever in forty-two series and these became non-virulent at

¹See the bibliography at the end of this article.

²If we want to try more specimens of ascitic fluids the number of the tubes must be increased accordingly, and vice versa.

³Recent experiments have shown me also that the cultivation can be carried out with an anaerobic apparatus and that a positive result may be had quite regularly.

The comparative merit between the series cultivated with and without the anaerobic apparatus will be discussed in a later publication.

the second or third generation, within 14-21 days. The other twenty-nine series yielded more encouraging results. Of the latter seventeen pertained to the fixed virus and the cultures remained virulent thirteen times to the fourth generation (28 days with resultant dilution 1:160,000); three times to the fifth generation (35 days with resultant dilution 1:3,200,000), and only once to the seventh generation (2 months with resultant dilution 1:1,280,000,000).

The twelve other series pertained to the passage virus, which lost its virulence in the generation between the third and sixth generation (within two months), except in one instance where after seven months it still proved to be virulent.

The pathogenic property of the fixed virus does not seem to suffer any marked modification, since the cultures, when used in sufficient quantities (0.1—0.01 cc.) killed the rabbits within six to eight days, while that of the passage virus culture varied to some extent from the original, proving fatal in some instances as early as one week or sometimes as late as sixty-three days after the inoculations.

The fact of my not having been able to obtain a more uniform result is undoubtedly to be ascribed to the imperfect method of cultivation employed in the present work, and the chief defect of the method probably lies in the unsuitable quality of some of the ascitic fluids used. That this latter fact may constitute the most serious cause of failure was shown in the cultivation of different varieties of pathogenic blood spirochaetes and the virus of poliomyelitis.

The morphological elements found in these virulent cultures were, as reported elsewhere, minute granular and pleomorphic bodies not unlike those described by previous investigators (J. Koch, Babes, Proescher, etc.). In addition, peculiar uninucleate bodies of varying size were

seen a few times. I have described them as of special significance, inasmuch as they were found only in virulent cultures and bear very close resemblance to the specific cell inclusions (Negri bodies) in the brains of animals which have succumbed to rabies. Throughout the studies on spirochaetes, vaccinia, poliomyelitis, hog-cholera, scarlatina, etc., for which similar culture media containing fresh tissues, ascitic fluids, nervous tissues, etc., are being used, I have never observed the bodies described here, although innumerable microscopical preparations of different cultures and controls, which had not been inoculated with the virus of rabies, had been examined day after day.

The cultivation of the micro-organism of epidemic poliomyelitis has been likewise accomplished by methods similar to those already described in the foregoing part of my paper. As reported in our previous articles we have isolated a minute, strictly anaerobic, globoid micro-organism from the materials derived both from the human and the experimental (monkeys) poliomyelitis. Some of these minute globoid bodies are so small as to pass through the pores of Berkefeld filters, N. and V., and in one instance they remained virulent for the monkey after the twentieth generation in artificial media. On the other hand we experienced a rapid and often a sudden attenuation of the virulence in many instances. Here, as in the cases of other strictly parasitic varieties of microbes which frustrated our previous efforts at cultivation, the success of the cultivation is still extremely variable. Amoss succeeded in inducing the organism to multiply in vitro by incubating a fragment of the brain of monkeys which had succumbed to experimental poliomyelitis.

III.—The Etiology of the So-called Parasyphilitic Conditions.

While the statistics of various clini-

cians show that general paralysis and tabes develop in persons who have suffered from syphilis, no conclusive evidence hitherto existed to show that they are a true syphilitic affection. The cytological, biochemical and serological discoveries have, however, made the intimate relation between syphilis and so-called parasyphilis more probable than ever, though not conclusive because the demonstration of the causative agent of syphilis was not accomplished. Thus we faced a paradoxical situation, namely, that in parasyphilis certain phenomena indicative of active syphilitic processes occurred without the syphilitic organism being demonstrated in the affected organ. The observations of Alzheimer, Mott, Nonne, Fournier, Krafft-Ebing and others on the juvenile form of general paralysis and its close relationship to parental syphilis, along with the simultaneous existence of paretic and syphilitic lesions in certain cases reported by Zambaco, Westphal, L. Meyer, Binswanger, Hübner, Sträussler and others, rendered the syphilitic nature of these conditions more probable.

Thus it will be seen that the solution of the vexed question of the relation of syphilis and parasyphilis depended solely upon the finding of *Treponema pallidum* in the lesions. Much time and labor have been devoted to this end by various investigators since the epoch-making discovery of Schaudinn and Hoffmann, but unsuccessfully.

In spite of these failures, in themselves discouraging, I was led by the observation that *Treponema pallidum* sometimes assumes a granular form in cultures to re-study sections of paretic brains stained for the pallidum. The search was exhaustive, since I was determined to study all kinds of granular particles which could be identified with the granular forms of the pallidum as found in the cultures. After studying 69 out of 70 preparations a spiro-

chaeta caught my eye—just at the moment when I was about to give up the search as hopeless, since I could not make up my mind as to whether the granules in the preparations were the granular form of the pallidum or precipitates. One typical spirochaeta out of 70 preparations was, however, sufficient to compel me to go over all the sections repeatedly, with the result that typical pallida were demonstrated in 12 out of 70 cases. These findings were published with Dr. J. W. Moore in February, 1913.

Immediately afterwards 130 more paralytic brains were studied in which pallida were demonstrated in 36 additional cases of this series, thus giving positive findings in about 25 per cent. when both series were calculated together (48 in 200 cases). The dark field illumination was employed with fresh brains in six instances and in one of the six cases pallidum was demonstrated. The use of the dark field is recommended whenever a fresh specimen of brain is to be examined, since it affords a rapid search for the pallidum over different localities of the specimen.

These results were soon confirmed by others. Thus Marinesco and Minea reported one positive finding in 26 cases by the silver method; then Marie, Levaditi and Bankowski 3 positive in 14 cases by the silver impregnation, all positive in 6 cases dying during fits, by means of Burri's tusch method, as well as the dark-field microscope; Forster and Tomaszewski 19 positive in 25 cases in which the materials were taken out of the patients by means of Neisser-Pollak's punctation and examined by means of dark-field illumination. Forster and Tomaszewski observed active movements of the organism. Versé, Mott, Berger, Geber, Benedek and Tatar also reported positive findings.

The relation of the *Treponema pallidum* to the tissue elements of the affected

brains may be stated briefly to be a progressive spirochaetosis of the brain, affecting chiefly the cortical layers, and varying in dimension and localisation according to the stages of the disease. In spite of diffuse cellular infiltration the pallida have been demonstrated in the pia only a few times. The nerve cells are often seen to contain one or more spirochaetes, while the wall of blood vessels is seldom seen to be invaded. The presence of the pallidum in the parenchyma may explain many of the histopathological alterations, as well as clinical manifestations, observed in the disease. The new formation of capillaries associated with increase in the supporting glia constituents and atrophy of the nervous elements, as well as the infiltration of the vessel walls, must be ascribed to the activities of the spirochaetae, although the intensity and character of the lesions may be modified through the existence of an anaphylactic state, as suggested by McIntosh and Fildes in a recent publication.

Treponema pallidum has also been demonstrated in one of the twelve specimens of spinal cords from the cases of tabes, where it was found in a sparse number around the nerve cells near the posterior horn. A positive finding was reported also by Versé in two cases of tabes.

The biological properties of the *Treponema pallidum* found in general paralysis are of considerable interest. Those who maintain the syphilitic theory of general paralysis and tabes mostly emphasize the benign character of the infection during the primary and secondary stages. They are inclined to think that the organism which later affects the central nervous system in some way had specific affinity for the latter. The oft-quoted instance reported by Brosius, in which several glass blowers infected from the same source later developed either paresis, taboparesis or cerebrospinal lues, is familiar.

Whether there is a virus nerveux among the pallidum strains is important from a practical standpoint, but up to date no exact investigation covering this point has been made.

In order to determine, first, the infectiousness and then the properties of the spirochaeta found in the brains in general paralysis I have undertaken a series of experiments to transmit the pallida directly from paretic brains to the rabbit. Thirty-six rabbits were inoculated with the emulsions of six different fresh specimens of the paretic brains. Two of the six inoculated with the material derived from one of the cases developed in the course of 97 and 102 days, respectively, small but typical induration in the testicle parenchyma and scrotal skin. In the first instance the pallida were extremely few in number, while in the second they were present abundantly. The development of the lesions was unusually slow when compared with the transmissions made from usual chancres or secondary lesions in this animal. In the latter instances the lesions appear usually within four to six weeks, seldom as late as two months. The second generation of this strain (paresis) also gave rise to rather small and only slightly indurated lesions in one of four rabbits by testicular inoculation. The incubation period was again nearly three months. My experiments have thus been limited to a small number of brain specimens (six), but have nevertheless shown the infectiousness of the spirochaetae present in paretic brains and hence established their virulence as low for the rabbit.

Nichols and Hough have also produced syphilitic keratitis in rabbits by means of intratesticular inoculations of the emulsion of a paretic brain. In their instances, however, they failed to find the pallidum in the lesion, but the keratitis lesion was transmitted to a subsequent series of rab-

bits. Graves has reported success in producing not only keratitis, but also skin papules in the prepuce of rabbits by inoculating the blood of paretics. The data so far available do not permit us to draw any conclusions in regard to the existence of a strain specific for the central nervous system, but they settle the infectiousness of the organism found in general paralysis.*

The cause of the long interval between the time of the primary syphilitic infection and the development of parietic symptoms—averaging eight to twelve years—is still unsolved. Between the latency and the pathogenesis of paresis there may be some definite relation. Why does cerebral or cerebrospinal lues appear much sooner than so-called parasyphilis? I am not aware of any satisfactory solution to this question. Regarding this I may quote briefly certain experimental results recently obtained. The central nervous system of monkeys and rabbits is highly refractory to the syphilitic infection, even when the virus is directly introduced into the cerebral substance. Most of the animals remain perfectly well for an indefinite period of time after the intracerebral inoculation of the pallidum. Probably these animals require a previous sensitization before the pallidum can be made to infect the brains. For this reason I have treated animals with repeated intravenous inoculations of the killed and living pallidum during five months, and then after a recess of five months made an intracerebral inoculation of an emulsion, or a subdural insertion of a minute piece of testicular syphiloma (rabbit)

*Nichols has made a highly significant observation on a strain of *Treponema pallidum* transmitted from a case of neurorecidive to the rabbits (Nichols and Hough), to the effect that it exhibits an unusual invasive property in rabbits. This characteristic is suspected by him to enable such a strain to establish itself more readily in the central nervous system, leading eventually to syphilis of these organs.

rich in the pallida. Twelve rabbits composed this series of experiments. Four normal (young) rabbits were similarly inoculated with the same materials on the same day and served as controls. All the animals remained apparently well for two months, when some of the sensitized animals became stuporous, inactive, emaciated, and showed a definite spasticity of the lower limbs and slight ataxia. The pupillary reactions were of no use for diagnosis, as they are normally often unequal in size and slow in responding to the light stimuli. The manifestations progressed steadily in the sensitized animals. They became unable to jump after three to five months. Their sera originally giving Wassermann reactions showed in some definite positive reactions. During the same period the control animals all remained active, except that some of them lost in weight. None showed a positive Wassermann reaction. The animals were sacrificed (under either anesthesia) one after another within a period of from three to five months, in order to examine the brains. It is impossible here to describe the findings in detail, but I may simply state that among the brains of the sensitized animals I found diffuse non-purulent exudative meningitis three times, a marked unilateral atrophy of the frontal lobes once, diffuse firmness of the cerebrum twice, and a few minute patches about 2 x 2 mm., of yellow color (plaque jaune) in the temporal region once. Dark-field examinations revealed no pallidum, but since the specimens were not extensively examined, in order to save them for histological studies, I lay no weight on this point. The sections stained by the silver impregnation showed in one brain numerous granules and a few well-defined spirochaetae. In others the pallidum could not be found. The sections from several animals stained with toluidin blue or haematoxylin-eosin revealed a marked

endothelial proliferation and perivascular infiltration not unlike specimens of cases of human paresis. In some localities glia cells were increased while most of the nerve cells appeared intact. The brains from the control animals revealed no changes in the capillary vessels, although in one instance a diffuse lymphocytosis throughout the cerebrum was observed. The above experiments are not without interest in the interpretation of the pathogenesis of general paresis, since they indicate that a previous sensitization renders the central nervous system of otherwise refractory animals vulnerable to the invasion of *Treponema pallidum*.

The actual presence of *Treponema pallidum* in the parenchymatous tissue of the central nervous system sufficiently explains the progressive and fatal nature of general paralysis. The inefficacy of the usual antisyphilitic treatment against this condition would be explained by the peculiar localization of the parasites in the affected organ. Through the introduction of salvarsan we have witnessed a distinct advance in the treatment of these cases of so-called parasyphilitic conditions, but still greater benefit would accrue if we were to direct our main effort towards the prevention of the disease. By the term prevention I mean in this particular instance the checking of its occurrence before the pallidum invades the central nervous system. In the majority of cases the invasion of the pallidum takes place (or at least becomes evident) after a long period of latency (eight to twelve years from the time of syphilitic infection). This long interval would give ample opportunity for the physician to detect the presence of a hidden focus of infection, not so much by the subjective symptoms as by certain objective signs presented by the patient. Of these we today possess at least two different means of detection—the Wassermann reaction

and the luetin reaction. As is well known, the former is positive in about 50 to 60 per cent of cases of latent syphilis, while the latter is positive in about 80 to 90 per cent of the same class of cases. Since these two reactions, which indicate two entirely different biological phenomena in syphilis, do not run parallel the chances of discovering a latent case are enhanced by the application of both methods. Neither must we overlook the great importance of detecting the existence of latent syphilis in any person, for the reason that paresis and tabes too often develop in individuals who had no knowledge of the existence of infection and who had remained in apparent good health until their central nervous system became affected. The value of an early detection of latent syphilis has become very much greater since we have been in a position to subdue it more effectually than was possible in the pre-salvarsan era.

I have stated that the allergetic state of the skin as revealed by the luetin test is almost constantly present in latent syphilis. On the other hand, this condition is by no means general in paretics and tabetics, being present in about 60 per cent of these cases only. The reverse is true with the Wassermann reaction. What is the cause of this discrepancy? I am inclined to think that in some paretics the allergetic state which existed during the latent period, disappears as soon as the pallidum enters the brain and multiplies there unrestrainedly and uncontrolled by the body of the patient, thus resulting in a de-anaphylactization. If this assumption is correct we would possess in the luetin reaction a means which may provide us with a clue as to the probable effect of treatment that may be expected in each instance. At all events a careful study of the relations of the skin allergy to the clinical aspects and the serological as well as biochemical conditions of the blood and

spinal fluid in general paralysis and tabes would be highly desirable.

Syphilis, an inheritable, infectious disease, was known to pervade every branch of medicine, and through recent revelations it has definitely claimed the great chapter of parasyphilis in psychiatry. The stamping out of this scourge requires not only the most vigilant medical measures, but also the conscientious co-operation of the general public, which would only become possible by fully arousing it to the perils involved by a more adequate method of education.

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REPORT OF TWO CASES OF SPHENOID DISEASE WITH BRAIN SYMPTOMS.*

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In reviewing the history of our knowledge of the nasal accessory sinuses in health and disease, it appears that affections of the sphenoid cavities have been the last to be recognized, and even today, I think, on account of their greater inaccessibility and the rather unsatisfactory results of the X-ray aid in diagnosis, the rhinologist is apt to leave these cavities unexplored.

I think it is still the impression that this cavity suffers disease very much less, and that infection is much less likely to extend to the brain through this cavity than any of the others.

The report of Onidi's 106 cases of cerebral abscess complicating accessory nasal sinus disease, of which 82 were frontal, 11 ethmoidal, 47 maxillary and 1 sphenoid, would seem to confirm this view. (*Centralblatt für Laryngologie*, etc., 1911, page 433.)

My own experience is that cases of simple catarrhal sinusitis are very frequent, the symptoms being usually of a mild na-

* Read before the Western Section of the American Otological, Rhinological and Laryngological Society, March 21, 1914.

ture. But they are more likely to clear up spontaneously than a similar degree of infection of the other cavities. For this reason we naturally find fewer chronic cases of sphenoid sinusitis. I have found the chronic cases nearly always associated with chronic inflammation of the posterior ethmoid cells. Hence, whenever I enterate the posterior ethmoidal cells I am always prepared to remove the anterior wall of the sphenoid cavity, and usually find clear indications for it.

In regard to the *modus operandi* of sphenoid infection, while we never can see the disease forces in action, clinical observation does teach us something definite.

I believe that when sphenoid infection occurs it is secondary to disease of some of the other cavities, in most instances of the posterior ethmoid cells.

If this be true, the usual difficulties attending the diagnosis of sphenoid disease will be greatly lessened, for affections of the posterior ethmoid cells can usually be easily determined.

Of course I have in mind that the rhinologist should use every means available to determine the condition of the sphenoid cavity without sacrificing the middle turbinate and, if the sphenoid is found diseased, should remove only as much of the turbinate as will be necessary for treatment of the sphenoid cavity.

The subjective symptoms which have been of most service to me in the diagnosis of chronic sphenoidal sinusitis, are deep-seated post-ocular pain, boring pain in the back of the head, somnolence, melancholia and general nervousness. These symptoms are especially pathognomonic of sphenoid disease. Other symptoms there are, but they are more or less common to diseases of the other cavities. More than that of the other cavities, except, perhaps, the maxillary, extensive chronic disease of the sphenoid may exist clandestinely for a long period of time,

and of course the resulting symptoms will be correspondingly obscure.

While the two cases I wish to report required few of the modern tedious methods of diagnosis, they will have, I think, an interest in themselves, and will exemplify some of the above observations.

Case 1—Male, Age 48.

Patient noticed distinct loss of memory for three or four months, then for several months entire forgetfulness of past events, and finally had spells of unconsciousness usually occurring at night. The night attacks were sometimes attended by tonic spasms, but those occurring by day were never so attended. Headaches were frequent, being diffuse after the night attacks, and occipital at other times.

His physician suspected syphilis, but the history was negative; likewise the Wassermann test. KI was given for four weeks without any benefit.

The patient did not report to his physician for some months, having sought relief from the Christian Science cult. When he did report, all the symptoms were somewhat aggravated. It was then noticed that there was a profuse purulent discharge from his nose. It was at this juncture that I saw the patient.

Examination Findings.—The patient admitted that the nasal discharge had been present for years, and also admitted an almost complete stoppage of the left nasal passage.

The probe showed the stenosis to be due to what at first seemed a bony wall, extending from the posterior end of the vomer to and including the posterior ends of the turbinates, with apparent occlusion of the entire upper part of the choana. On closer examination, however, a small opening was found through which the probe passed backward, seemingly through a bony wall, into the sphenoid cavity. The nasal septum was deviated in front of this wall to such a degree that

the opening could not be seen. Everywhere the probe touched, including the supposed sphenoid, the bony wall seemed roughly necrotic.

Operative Findings.—The patient went to the hospital prepared for general anesthesia, should it be needed.

The bulge was first taken out of the nasal septum, and the entire bony occlusion wall, which now was found to buttress the vomer, was removed with forceps and chisel. The upper part of this wall (on a level with the anterior wall of the sphenoid) through which the necrotic fistula extended, was three-quarters of an inch in thickness. When this part of the wall was removed the sphenoid cavity came fairly well into view. The curettement of this cavity revealed a wholly pyogenic lining with all the walls much roughened.

Despite careful cleansing and inspection of the cavity before curettement, I was unable to make out a distinct necrotic opening anywhere in the walls.

The left antrum was aspirated, but found not to be affected.

The entire anterior wall of the sphenoid cavity having been removed, and the approach to the sinus amply enlarged, the cavity was painted with tincture of iodine and packed with iodoform gauze.

The operation was done May 6, 1913. The patient was dismissed, healed, June 30, 1913.

Case 2.

This case lacks completeness, because there was no bacteriologic examination made, but I think it has an element of interest. The patient was a young girl of about 18 years. She had been in a comatose condition for over thirty-six hours. The temperature had not been recorded until the day before I saw her, when it rose to 104°. She had complained of pain in both ears and in the back of the head. The physician in attendance, judging

from a profuse discharge from the nose, thought she was suffering from an affection of the accessory nasal sinuses. This discharge was said by the family to have existed for a number of years, but had only lately become odorous. Examination of the ears did not show any trouble there. The macroscopic picture of the nasal passages was one of typical atrophic rhinitis.

The turbinates were almost wholly absorbed, so that a large part of the nasopharynx could be seen, but the odor was not that usually present in ozena. The maxillary antra could easily be canulized, and were found to contain thin mucoid fluid. On probing the sphenoids, which was made easy by the extreme atrophy of the tissues, the mucosa of the orifices and that of the cavities were very friable. It needed everywhere only a tender touch of the probe to reveal bare bone.

In one cavity there was extensive necrosis and in the other necrosis of the floor. The anterior walls were easily broken down even with the floor. Almost every part of the cavity could then be seen. The pyogenic membrane was gently separated and the necrotic tissue removed with the curette.

The mental and other brain symptoms (it will be observed that I do not commit myself on the diagnosis of this case) cleared up gradually. It was not until the end of the fourth month after the operation that the patient made a complete recovery. It will be noted that the patient had periodical headaches. At such times he also had a moderate rise of temperature.

The point of interest in this case centers in the question whether there had been pressure from an extradural abscess which finally broke into the cavity, or indeed whether at the time of the operation there was one which was broken up by curettement; or whether the presence of

the infected necrotic tissue in the cavities and exudates arising from them, more or less confined at times, alone caused the brain symptoms.

It would also be interesting to know how this bony occlusion bridge from the vomer across to the opposite wall of the nasal fossa, making the anterior wall of the sphenoid over half an inch thick, came to exist. Was it a congenital development or a mere exostosis of the vomer? If the latter, how may we account for the duct extending through it antero-posteriorly into the sphenoid?

The necrotic part of the upper wall was removed and a large part of the dura exposed. Some pus was seen after careful loosening of the dura around the margin of the exenterated sinus walls. The cavities, including the exposed dura and the nasal fossae, were swabbed with iodine and packed with plain gauze.

The after treatment consisted of the ordinary removal of any granular tissue arising around the margins of the exenterated anterior walls, and the application of silver nitrate gauze drainage was used for ten days. The very high temperature dropped to normal in a few days, and *pari passu* the mental condition improved to normal. The field from which the dead bone was removed was naturally in this deep recess never quite clear enough to determine the amount of extradural pus present, but I think it quite probable, in view of the fact that there was no other pus focus found, that there was a sufficient amount confined there to cause pressure symptoms and systemic poisoning.

825 Nevada Avenue.

REPORT OF THE SECRETARY TO THE GENERAL SESSION OF THE IMPORTANT THINGS DONE BY THE HOUSE OF DELEGATES.

The sum of two hundred dollars was allowed for the purchase of books to be deposited with our custodian, the Library of the

Medical Society of the City and County of Denver.

It was voted that the editor of Colorado Medicine be made an ex-officio member of the Committee on Scientific Work.

It was recommended to our constituent societies that their secretaries be elected for a term of three years.

The recommendation of President Gilbert in his annual address that a Department of Public Health be created, was favorably received, and it was voted that the Committee on Public Policy be instructed to prepare a bill and secure its passage through the coming session of the State Legislature which would create a State Department of Public Health, to be composed of a Commissioner of Public Health with six councilors, one of these to be an engineer on sanitation, and that the bill generally be patterned after the law of the State of Massachusetts and the Hospital Law of the State of Texas.

It was Resolved, That the House of Delegates hereby approves and consents to the amendment proposed by the House of Delegates of the American Medical Association, by which the power of appellate jurisdiction is given to the Judicial Council of the A. M. A. over cases and controversies arising within the jurisdiction of constituent associations and their component societies.

The report of the committee to co-operate with the State Pharmacal Association was adopted and it was recommended that the Committee on Public Policy draft a bill for introduction in the State Legislature embodying their recommendations, namely, the curtailing of the sale and use of habit-forming drugs, the care of those already addicted to their use by the establishment of suitable quarters for their treatment and control at public expense, and the voluntary or judicial commitment of such persons; also for the enactment of such ordinances as will more effectively control the sale of narcotics.

Dr. Dyde reported as a special committee of one on Medical Defense, reading letters and submitting literature received from the secretaries of the medical societies of many states which have adopted medical defense. After considerable discussion a committee of three was appointed to investigate this matter and report with definite recommendations at the next meeting of the Society.

The resignation of Dr. Moleen from the Publication Committee was accepted.

The following officers were elected:

President, Geo. B. Packard, Denver.

First Vice President, Ella Mead, Greeley.

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Councilor, District No. 5, Edgar Hadley, Telluride.

Member Publication Committee, L. B. Lockard, Denver.

Member Publication Committee (unexpired term of Dr. Moleen), Melville Black, Denver.

Chairman Committee on Public Policy, W. H. Sharpley, Denver.

The time of next meeting, first Tuesday of October, 1915. Place of meeting, Denver.

A vote of thanks was tendered to the Boulder County Society and the City of Boulder for the splendid entertainment accorded us. This meeting is the largest in the history of the Society, the registration being 339.

MELVILLE BLACK,
Secretary.

News Notes

At the meeting of the Denver County Medical Society on September 1st, the Board of Trustees reported that, in addition to the amount of between \$2,000 and \$3,000 subscribed last winter by members of the Society for the improvement of the library, a further sum of \$1,000 had been added to the fund by Mr. Dennis Sullivan, and a still further sum of \$100 by a friend whose name was not given. The thanks of the Society were unanimously voted to Mr. Sullivan for his handsome gift.

The "Boulder Camera" (no doubt under inspiration) is responsible for the following statements concerning Dr. Hideyo Noguchi, the famous serologist who addressed us at the Boulder meeting: Graduating from the Tokio Medical College in 1897, he held a titular professorship under the Japanese government, and was assistant in the general hospital at Tokio until 1901. In that year he came to Philadelphia to take graduate work. In 1906 the University of Pennsylvania conferred upon him the degree of Master of Science. He is now attached to the Rockefeller Institute of Medical Research in New York City. He has been knighted on account of medical work by King Alphonse of Spain and King Christian of Denmark.

The Colorado Association of Health Officers, recently established, held a meeting at Boulder on September 10th. Over one hundred were in attendance. The report of the Committee on constitution and by-laws was adopted, and an address by Dr. Farrand was given on Public Health. Dr. Farrand is said to have been the prime mover for the foundation of the association. The keynote of his address was the need for accuracy in furnishing vital statistics. He also emphasized the urgent necessity of the medical profession leading the public in matters of public health, instead of allowing itself to be led by the public. Drs. Crum Epler of Pueblo and Omar Gillette of Colorado Springs

were elected as further members of the advisory board.

The new regulations of the Denver Health Department concerning infectious diseases among school children require that any child absent from school more than three days shall only be readmitted upon presentation of a certificate from a licensed physician that after personal examination the child is found free from evidence of contagious disease.

The work of the medical clinic established last winter by the Denver City Commissioners was lately the subject of rather lengthy comment in one of the Denver newspapers. It was stated that the work of the clinic was hampered by the fact that the appropriation for it was insufficient.

The Denver City Health Department recently caused the arrest of three physicians on a charge of illegally writing prescriptions for narcotic drugs. One of the physicians stated that the only such prescription which he had written was rendered urgently necessary by the condition of the patient.

The Denver Health Department recently clashed with the Hurlbut Grocery concerning the insanitary condition of fruit displayed for sale by the company. The Department's demands were finally complied with.

Although Dr. Freeman and his wife did not leave Europe until August 6th, they were able to retain their first class reservations, while in steerage and second cabin on the same ship were people who had engaged de luxe apartments on liners due to sail at a later date, but whose movements were not to be relied upon.

Dr. Saling Simon was in Switzerland when Austria declared war on Serbia. He hurried to London, but did not leave there until August 9th, when he was lucky enough to be able to travel in the berth which he had reserved, although to ensure getting away he had bought steerage tickets on two other vessels. Dr. Simon has been studying tuberculosis problems in Germany and Switzerland.

Dr. C. P. Steeves, Dr. May B. Kruse, and Dr. La Croix were among a party of Americans who returned from Italy in an emigrant vessel which normally plies to South America, but which seized the golden opportunity afforded by the war.

Dr. Ethel Fraser and Dr. Elsie Pratt reached Naples from the United States in an Austrian liner which had the exciting experience of being chased by a French war vessel. They abandoned their European tour, and immediately arranged for passage home. They had to pay first class rates for steerage.

Dr. and Mrs. Juenemann of Fort Logan are celebrating the arrival of a little daughter.

As a result of the war, Schering and Glatz, whose advertisement of imported drugs has been appearing regularly in this journal, have decided temporarily to withdraw their advertising from all medical journals.

The Henry S. Dennison Memorial Building for Medical Research, at Boulder, is now ready for use. It contains laboratories for research

in bacteriology, pathology, physiology, chemistry and clinical methods.

A three-story wing, which cost \$8,600 without equipment, has been added to the Boulder Hospital. The hospital will now have 58 beds.

Dr. James C. Todd, Professor of Pathology in the University of Colorado, whose prolonged illness so many deeply regret, was in May last granted a year's leave of absence by the Regents of the University.

Dr. Ida V. Beers is convalescing nicely after an extirpation of the gall bladder, by Dr. Buchtel.

The American Journal of Surgery announces that, beginning with its October issue, it will publish regularly a 32-page supplement dealing with anesthesia and analgesia.

Major Jay R. Shook, who for four years has been in charge of the recruiting station at Fort Logan, left on September 5th for a month's leave, after which he will take transport from San Francisco for a three years' tour of duty in the Philippines. This leaves (for the present) Captain G. F. Juenemann in charge of the recruiting station.

The late Dr. T. L. Hutchison of Glenwood Springs has apparently been succeeded by one of that hybrid species, the optician who poses as a physician. The gentleman in question, "Dr." T. J. Newlin, has placed one of the usual plausible advertisements in the news columns of the Glenwood Springs Post, in which we are informed that the "Doctor" was at one time professor in the Philadelphia Optical College in the following encyclopedic group of subjects: "Anatomy, physiology, hygiene, ophthalmology, subjective and objective optometry, osteopathy, and the shadow test, the latter to which (sic!) he added his latest discoveries." We trust that the medical profession of Glenwood Springs and the surrounding country will form a proper estimate of "Dr." Newlin's professional attainments.

The Teller County Medical Society recently entertained at a banquet which preceded its regular monthly meeting the following visitors: Dr. O. M. Gilbert, Dr. Melville Black, Dr. W. A. Jayne, and Dr. Robert Levy.

Dr. C. W. Plumb, city physician of Grand Junction, has been making arrangements for thorough inspection of the school children of Grand Junction as to defects of the eyes, ears, nose, and throat.

Dr. W. E. Dillingham of Meade was killed by lightning on August 20th, while crossing Horseshoe Pass on his way from Grand Lake to Estes Park. His little son, who was riding a horse which the doctor was leading, escaped without injury, although the horse was also killed.

D. C. A. Tennant and his family fortunately escaped without injury when their car turned almost a complete somersault down a bank on Willow Creek Pass, between Middle and North Parks.

A similar accident, with equally fortunate escapes, occurred to Dr. J. H. Cole and a party of friends near Yampa, Colorado.

Dr. Grant Safely, formerly of Boulder, was on August 11th fatally injured in an automobile accident near San Francisco, California.

Dr. L. B. Overfelt of Boulder was rather severely injured, and several members of his family slightly so, when the doctor's automobile collided head-on with a buggy on the evening of August 21st.

Dr. C. S. Phelan of Salida had three ribs broken by his own automobile on August 14th. The doctor was starting his machine, which ran over him.

Dr. Earl V. Adams of Topeka, Kansas, has decided to locate in Grand Junction.

Dr. G. H. Kittell of Cañon City has removed to Newton, Kansas.

In the early part of September Dr. J. R. Hopkins was visited by his former classmate (1893) at Toronto Medical College, Dr. W. C. C. Freeman, now practicing at Rock Springs, Wyoming.

Dr. Joseph Allen has gone east on a visit to his parents. He will return about October 1.

Pueblo Notes.

Dr. W. B. Davis, United States consul at Guadalajara, Mexico, and formerly of Pueblo, has been ordered back to his post, which he had been obliged to leave during the late Mexican troubles.

Dr. W. F. Singer recently suffered arrest as the result of the strange opinion of a policeman that thirty miles an hour was an unreasonable speed at which to drive the doctor's automobile along the city streets.

The Pueblo County Medical Society appointed Drs. Crum Epler, C. V. Marmaduke, and W. T. H. Baker as a committee to take charge of the arrangements for the baby contest at the Pueblo State Fair, September 14 to 20.

The Pueblo County Medical Society has recently had the club rooms remodeled and enlarged, so that they are much more adapted to the society's purposes. The first fall meeting was held September 1st with a large attendance. The proposed amendments to the by-laws were discussed and adopted with but few changes. Dr. R. W. Corwin presented a paper on "The end results of gall bladder surgery".

By a recent resolution meetings are to be held four times a month. The Program Committee sent out a revised list of speakers, from which it seems likely that Pueblo members will enjoy the best series of papers ever presented to the society.

Dr. H. M. Thompson and his wife spent their vacation in Pennsylvania with Mrs. Thompson's family.

Drs. J. J. Pattee, W. T. H. Baker, E. A. Elder, Crum Epler, H. A. Lord, F. E. Wallace, and others went to the State Meeting at Boulder by auto.

Dr. Phillip Work will go east soon to spend a year in special study of nervous diseases and psychiatry. He will then be associated with his father Dr. Hubert Work at Woodcroft.

Dr. J. M. Keeney spent the month of August in California, where Mrs. Keeney had been for the benefit of her health.

Dr. W. E. Buck recently spent two weeks in Chicago and Buffalo.

Dr. T. A. Stoddard spent three weeks fishing on the Gunnison.

Dr. and Mrs. H. M. Thompson have been spending a two month's vacation in New York, Philadelphia, and other eastern cities.

Dr. W. H. Campbell has been visiting relatives in West Virginia.

Drs. Bulette and Ryon have moved into new offices in the Thatcher building.

The Pueblo Society unanimously indorsed Dr. Work's candidature for the Senate.

Colorado Springs Notes.

Dr. Chas. O. Giese, formerly with the Modern Woodman Sanitarium at Woodmen, Colo., has opened an office in the Exchange Bank building, Colorado Springs.

Dr. C. F. Gardiner toured the eastern states and attended the meeting of the American Medical Association at Atlantic City.

Dr. H. C. Moses and family have been visiting relatives in Ohio. While in the east the Doctor attended the meeting of the American Roentgen Ray Society at Cleveland, Ohio.

Dr. Beverley Tucker recently underwent an operation for acute appendicitis at St. Francis' Hospital. He has been doing nicely.

Dr. E. A. Hoefer of Colorado City was recently arrested charged by the District Attorney with practicing medicine without a license.

Constituent Societies

SAN LUIS VALLEY MEDICAL SOCIETY.

The San Luis Valley Medical Society met at Del Norte on Tuesday, July 14, 1914. Dinner was served by the Sisters at the Sanitarium. Dr. Cochems of Salida, who has recently returned from abroad, was a guest of the society and talked on what he saw in the clinics of New York, London, and continental Europe. One of the things that impressed him most was the operation, by Dr. Fuller of New York, of vasectomy for chronic gonorrheal rheumatism. He saw several post-operative cases and believed Dr. Fuller was getting the results he claimed. Dr. Lane's work in bone-plating and the short circuiting operation was very instructive. Lane corrected an impression that had gone abroad, that he claimed auto-toxemia was caused from stasis in the large bowel, whereas Lane claims that stasis in the large bowel causes stasis in the small bowel.

Dr. Cochems' visit was much appreciated by all the members present.

Two cases were presented to the society for diagnosis.

Drs. Miller, Crawley, and Callahan were elected members of the society.

Those present were Drs. Pollock, Trueblood, Moninger, Miller, McFadzean, Doane, Biles, Shippey, Callahan, Richmond, Davlin, and Herriman.

Book Reviews

International Clinics.—A quarterly of illustrated clinical lectures and especially prepared original articles, by leading members of the medical profession throughout the world. Vol. 2, Twenty-fourth Series, 1914. J. B. Lippincott Company.

This series includes under the heading of Diagnosis and Treatment six very important and practical medical subjects; under Medicine three articles of value; under Surgery eleven concise and impressive papers along purely surgical lines; under Obstetrics two much-needed discussions and under Child Welfare the gist of Sex Hygiene Teaching.

The volume as a whole is valuable and contains articles by eminent men such as Ballantyne, Duckworth, Beck, Jacobs and Hall. "The Treatment of Prostatism;" "The Present Status of the Röntgen Ray in Diagnosis and Treatment of Disease;" "The Obstetric Forceps;" "Tuberculous Hip-joint Disease and Bismuth Paste;" and "Vaughn's Studies in Split-Protein Products and Immunity;" are among the most interesting papers, while the book is rich in plates and figures.

All the articles are to the point, short and forceful; and the volume is well worth reading. R. H.

Clinical Hematology: An Introduction to the Clinical Study of the So-Called Blood Diseases and of Allied Disorders. By Gordon R. Ward, M.D., Fellow of the Royal Society of Medicine, Medical Society of London, etc. Octavo of 394 pages, illustrated. Philadelphia and London: W. B. Saunders Company, 1914. Cloth, \$3.50 net.

As its name implies, this work treats this difficult and still obscure chapter of medicine from the standpoint of the bedside rather than of the laboratory. A great deal of study has been devoted to the so-called blood diseases, but mostly from the pathologic side. There is an enormous literature on the origin of the different white corpuscles and their bearing on the pathology of the leukemias as seen by the dualistic or unitarian school. Similarly the battle rages fiercely on the pathogenesis of the numerous types of anemia. Dr. Nord devotes the greater part of his attention to the symptomatology, prognosis and treatment. Nevertheless he cannot quite escape entering the lists with a brand new classification of blood diseases which appears somewhat strained, since the basis of classification is changeable at will. Inasmuch as the author admits that his arrangement is purely arbitrary and subject to criticism, we can have no quarrel with him any more than with the man who dictates a fanciful spelling of his own name.

The subject matter comprises forty different blood diseases, from the leukemias, which are classified as generalized affections of blood forming tissues, through the anemias,

which are grouped under affections of red cell formation and destruction, to affections of circulating red cells due to parasites or toxins, and affections of the plasma under which are included chlorosis and hemophilia.

After two brief chapters on the blood forming organs, the corpuscles, and the methods of blood examination, there follows a rather exhaustive clinical treatment of the various so-called blood diseases, which cannot but be profitable to the practitioner, interested as he is in that phase of the subject. P. H.

A Text-Book of General Bacteriology. By Edwin O. Jordan, Ph.D., Professor of Bacteriology in the University of Chicago and in Rush Medical College. Fourth edition thoroughly revised. Octavo of 647 pages, fully illustrated. Philadelphia and London: W. B. Saunders Company, 1914. Cloth, \$3.00 net.

The previous edition of this work was commented on in this journal only a short time ago. The appearance of a new edition attests its popularity.

New subject matters treated in this volume are the filterable viruses of rabies, small pox, yellow fever, measles, and scarlet fever. Flexner's and Noguchi's recent work on the specific micro-organism of poliomyelitis is given due attention, as is the newer research in the etiology of whooping cough.

The chapters devoted to the bacteriology of milk products, to the rôle of micro-organisms in agriculture and in the arts and industries, to the bacteria of air soil and water, and the bacterial diseases of plants greatly enhance the value of the work and widen its usefulness beyond the sphere of medicine so as aptly to merit the title "General Bacteriology." P. H.

The Practice of Surgery. By James Gregory Mumford, M.D., Lecturer on Surgery in Harvard University; Surgeon to the Clifton Springs (N. Y.) Hospital; Fellow of the American Surgical Association; Recently Visiting Surgeon to the Massachusetts General Hospital; etc. 1032 pp., with 683 illustrations. Second edition, thoroughly revised. Philadelphia and London: W. B. Saunders Company, 1914.

In this, the second edition of his *Practice of Surgery*, the author follows the same unconventional arrangement of subject matter as in the first edition (1910). While the grouping of subjects is in a measure regional, there is no definite system along this line, and surgical conditions are taken up in order of importance, frequency and interest. For example, Part I is devoted to the abdomen, and commences with a discussion on appendicitis.

On the subject of appendicitis it is our opinion that very few surgeons will accept the author's teaching in regard to drainage. In all cases except chronic appendicitis and interval operations, he drains for at least forty-eight hours.

Additions and alterations in this edition are few and of very minor character, perhaps the most conspicuous being the addition of a short treatise of four pages on the surgical con-

ditions of the abdominal wall. The illustrations throughout are identical with those in the first edition. They are numerous and good, some original, though mostly borrowed (with due credit given). The latter, however, are well used to illustrate the text.

In places the operative technic is described in detail, in others perhaps too briefly, while in some instances the author merely indicates the lines of procedure. Where a number of procedures might be advocated, frequently only one or rarely two or three are cited, following out the author's aim to give only those which in his experience have proven themselves the most efficient and reliable.

The book is most clearly and entertainingly written. The author has the faculty of taking the reader with him to the bedside and operating table. In his description of cases, he inclines more to average than to classical ones, and outlines their development from incipency to the time they reach the surgeon. Many points he makes clear by citation of cases occurring in his own practice. The book is entirely free from padding, with the exception of short historical sketches preceding some of the major subjects.

As the work was apparently written for those fairly advanced in surgery, so that the author takes for granted a fair working knowledge of surgical anatomy and pathology and operative technic, it probably will not be extensively used by undergraduate students, other than for collateral reading. E. v. B.

Anoci-Association. By George W. Crile, M.D., Professor of Surgery, School of Medicine, Western Reserve University, Cleveland; and William E. Lower, M.D., Associate Professor of Genito-Urinary Surgery, School of Medicine, Western Reserve University, Cleveland. Octavo of 259 pages, with original illustrations. Philadelphia and London: W. B. Saunders Company, 1914.

"In the course of evolution certain portions of the body were constantly exposed to danger, and as a consequence a special mechanism was evolved for their adequate defense. This mechanism consists of nerve ceptors to receive the injurious contact; of fibers to convey the message of danger to the brain; of a store of energy in the cells of the brain which, upon the receipt of an adequate stimulus, is spontaneously released to produce a protective muscular activity. The truth of this postulate being granted, it becomes evident that the sum total of brain-cell energy must be diminished by each stimulus, and it follows as a self-evident corollary that the brain-cell energy will be most greatly diminished by injuring contacts with those parts of the body most richly supplied with nociceptors. The comparative shock-producing effects of operations upon different portions of the body are thus explained—and in the explanation appears *prima facie* one key to the achievement of the shockless operation—the use in these shock-producing regions of gentle manipulations and of a technique which—as far as possible—differs from the forces as

an adaptation to meet which the defensive mechanism was evolved."

The above quotation states briefly the rationale of anoci-association. The book is written in the usual convincing style of Dr. Crile. It is very well printed and the illustrations are good.

F. C. B.

A Treatise on Clinical Medicine. By William Hanna Thomson, M. D., LL. D., formerly Professor of Practice of Medicine and of Diseases of the Nervous System in the New York University Medical College; Ex-President of the New York Academy of Medicine, etc. Octavo volume of 667 pages. Philadelphia and London: W. B. Saunders Company, 1914. Cloth, \$5.00. Half Morocco, \$6.50.

So many books have been written on almost every conceivable medical topic that it is refreshing to meet with a volume which approaches so well-worn a subject as "Clinical Medicine" with so much originality of thought and arrangement as is displayed in this interesting volume. The author has endeavored, and quite successfully, to give the practical physician a comprehensive view of the individual cases which he encounters in his daily rounds. Less attention has been given to laboratory diagnosis and pathology than to the clinical picture as seen in the living patient, as well as the probable course of the disease and its successful treatment. Some commonplace disturbances with which we often find ourselves less familiar than we thought we were are here discussed from a logical and practical point of view. The author begins with the meaning of certain common but important symptoms. Thus, a whole chapter is devoted to the "Pathology of Chill Affecting Localized Areas of the Skin," concerning which the statement is made that "Outside of hot, moist climates, the most common cause of disease and of death is from 'catching cold'". Another chapter deals with the use of remedies and how they can be most conveniently classified according to their special applications. A large section considers the infectious diseases, and attempts a satisfactory re-classification of them. The last section deals with diseases of particular organs and tissues. Differential diagnosis is only taken up to a limited extent.

T. R. L.

Anatomy and Physiology of the Eye and Its Appendages. By John Welsh Croskey, M.D., Ophthalmic Surgeon to the Philadelphia General Hospital. Published by Smith-Edwards Co., 129 North Twelfth Street, Philadelphia.

This modest pamphlet is the outgrowth of instruction given to students and nurses at the Philadelphia General Hospital, and is based upon the belief that if the anatomy of the eye is fully understood, subsequent study of the organ and its diseases is rendered much less difficult. The eighteen pages of terse and compact letterpress are accompanied by two somewhat schematic but very serviceable illustrations in colors. No price is stated.

FULL-TIME PROFESSORS AT JOHNS HOPKINS.

On July 6th delivery was made at Baltimore of securities valued at \$1,500,000 presented by the general education board to the medical school of Johns Hopkins University. This gift is to be known as the William H. Welch endowment for clinical education and research.

The entire income from this fund will be utilized for the support of full-time teaching and research departments of medicine, surgery and pediatrics.

The hospital wards and out-patient departments are to be under the control of the university medical or surgical teachers, but outside their work in the public wards, the teachers are to be free to render any service required in the interest of humanity and science. Patients of the usual private patient type will pay a reasonable fee to the university, rather than to the professors personally. The time and the energy of the professors will be fully protected, since they are themselves to become sole judges as to whether or not particular cases shall or shall not command their personal attention.

Dr. Theodore C. Janeway, hitherto professor of medicine at Columbia University, has become full-time professor of medicine of the Johns Hopkins Medical School, the position once held by Sir William Osler. The chair of surgery is to be occupied by Dr. William S. Halsted, and the chair of pediatrics by Dr. John Howland.

A NEW FRAUD.

The board of medical examiners of the state of California during a recent campaign against illegal and quack practitioners, exposed a somewhat novel and ingenious method of fleecing the public. In to the regular catalog published by Parke Davis and Company of Detroit, Michigan, were inserted several fraudulent sheets ostensibly advertising a "Specific Blood Poison" (said to be a modified form of "606"), special rectal suppositories, so-called animal extract products alleged to be indicated in sexual neurasthenia, etc., a "Lymph Compound" stated to be an "absolute specific for sexual neurasthenia, nervous collapse, debilitated condition and brain disorders," and (last but not least) a "Special Cat Serum." It had been the custom for "case-takers" in quack offices to turn quickly to one of the inserted sheets and inform the patient that while the services of the physician would cost but a few dollars, it would be necessary to obtain from Parke Davis and Co. a tube of cat serum. The cat serum was noted on the inserted sheet as being sold in tubes 1, 2, and 3 for \$20.35, \$21.60, and \$26.40 respectively. The case taker would then inform the patient that by special arrangement the cat serum might be obtained at a slightly reduced rate if purchased through the quack concern.



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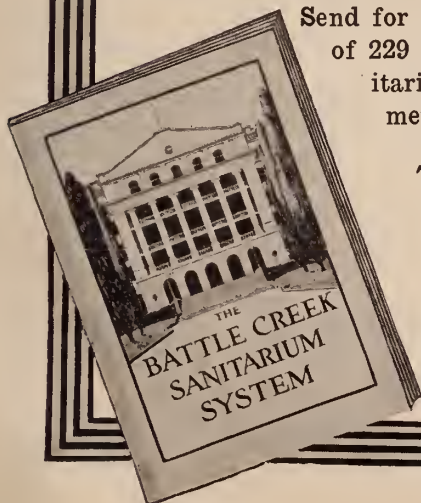
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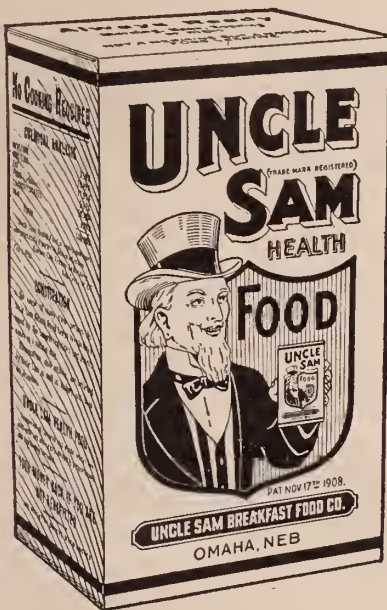
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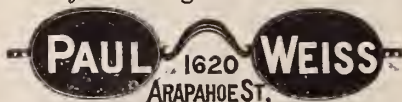
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Editorial Comment

THE PROCEEDINGS OF THE HOUSE OF DELEGATES.

There is a queer superstition to the effect that official documents are always deserving of the unlovely epithet "dry-as-dust." To take a very present example, the falsity of this impression is well illustrated by the fact that one of the most interesting publications which have appeared since the outbreak of the great European war is the official "white papers" of England and Germany as reprinted for us side by side by the enterprising New York Times.

The Colorado State Medical Society is publishing this month a "white paper" of its own, in the form of the Minutes of the Proceedings of the House of Delegates at Boulder, on September 8th, 9th, 10th and 11th, 1914. Few will read this document from start to finish, but every member of the State Society should at least acquaint himself with its leading features. Even the Treasurer's figures, perhaps commonly regarded as the most "dry-as-dust" of all, cannot be slighted by the member who wishes to have an intelligent understanding of the business of the Society. Of special interest will be found: The report of the Delegates to the Ameri-

can Medical Association; the report of the Committee on Health and Public Instruction; and the statement concerning the Library of the Colorado State Medical Society. The report of the Committee on Neurology is to be commended on account of the absence of those insincere efflorescences which so often mar similar documents.

THE AMERICAN COLLEGE OF SURGEONS.

The organization of the American College of Surgeons marks the beginning of a new era in American surgery. It may be many years before the somewhat Utopian aims of this organization can be wholly realized; and, indeed, they may never be fully and completely attained as set forth in the call for the first meeting. But there can be little doubt that under its guidance new standards for American surgeons and for surgical practice in America will ultimately be established.

"The primary purpose of this organization is not so much to help us as it is to help those who follow us. We are, so to speak, preparing an inheritance for our children," says one of the founders. This beneficent and altruistic keynote pervades and dominates the tenor of the organization as expressed in its transactions and exemplified in the character and personnel

of the eminent American surgeons who stand as sponsors for it.

The formation of a minimum standard of requirements, the legalizing under national, colonial, state or provincial laws of a distinct degree supplementary to the medical degree, to be conferred upon physicians possessing the requirements recognized by such laws as necessary to be possessed by operating surgeons; and an insistence upon strict integrity and honesty of purpose in dealing with patients and with each other, are objects worthy of attainment. The organization sets its face strongly and squarely against the division of fees, either directly or indirectly, and against the incompetent and unnecessary surgery which these practices are believed to promote.

Broadly speaking, then, its purposes appear to be, first and foremost, the good of humanity, and next the uplift of the profession.

That such an organization should excite criticism and resentment from some whose point of view makes it difficult for them to see its necessity, or whose methods do not conform to its requirements, goes without saying. It is to be hoped, however, that this spirit of antagonism will diminish as time elapses, and as the American College of Surgeons develops and demonstrates to the public and to the great body of medical men of America that its ideals and purposes are worthy and unselfish. The ultimate success of the organization depends upon the generous breadth of view and honesty of purpose with which its work is carried on. Selfishness, narrowness, partiality and unfair discrimination might destroy its usefulness, and it is sincerely to be hoped that none of these will be permitted to enter and militate against the success of an organization which has in it potential elements for the good of the public and of the profession.

Liberality and generosity should especially govern the administration of the affairs of the society during its formative years, and all qualified applicants for membership who will comply with the requirements should be given an opportunity to enter upon an equitable basis.

Too much credit can not be given to Dr. Franklin Martin and his associates for the part they have played in conceiving and organizing the American College of Surgeons. May its subsequent career justify in every way their faith and their work!

COURSE IN EYE, EAR, NOSE AND THROAT.

We are asked to announce that a special course for graduates in medicine upon diseases of the Eye, Ear, Nose and Throat, will be given in the Medical Department of the University of Colorado, in Denver, from November 9th to December 19th. It will include three hours or more of clinical work daily, and special lectures on diagnosis by means of the ophthalmoscope, and other methods of ocular examination, the anatomy and pathology of the organs, bacteriological and x-ray examination, and methods of operations for mastoiditis, sinus disease, septal resection, tonsillectomy, etc. The course has been arranged to include part of the work given in the summer course on Ophthalmology, with the most interesting and important topics of Oto-Laryngology.

THE VICTORIES OF PEACE.

The present European war is likely to furnish additional evidence that the ultimate basis of efficiency lies in properly caring for the health of the individual and of the mass. We have been reminded of the same fact in the plans for every new dash for the North or South Pole, and in every detail of the processes by which the

white man is gaining safe access to tropical regions. The death-rate from disease in the Japanese army during the war with Russia represented a striking advance as compared with the American Civil War or the Franco-Prussian War. For a war minister to ignore the danger that lurks in the typhoid bacillus, or for an Arctic explorer to expose his followers to the risk of scurvy, is to court defeat. For the United States Government to have occupied the Philippines without the aid of modern sanitation would have meant digging thousands of premature graves for American workers and soldiers. In the long run disease is a greater enemy to the human race than international or civil war, however terrible war may be.

The custodian of the public health will become a more and more important factor in the prosperity and happiness of the nation and of the community. It is one of the marvels of this century that Central American hotbeds of virulent contagion should become safer to live in than some of the large cities of the United States. The name of Goethals, the engineer, and that of Gorgas, the army surgeon, have been equally honored in the completion of the Panama Canal. It is certain that without the services of the latter, or of some equally efficient medical supervisor, the former could not have accomplished his task. All this should argue powerfully for the establishment of a national department of health, whose greatest duty would be the utmost possible limitation of preventable disease. The Southern Medical Journal has recently proposed to help the nation and honor Gorgas by placing him at the head of this new department, after retiring him from the army with the rank of major general. The essential thing is the establishment of such a health department, including in its range of action the best that has already been undertaken and accomplished in this

direction by the governments of Europe, with every improvement which can be suggested by American originality and enterprise. Above all, the health of the nation must be exalted beyond the jealousies of locality or sect.

MEDICAL POLITICS IN CHICAGO.

A recent bulletin of the Chicago Medical Society was devoted largely to politics. The society evidently proposes to do what it can to ensure that candidates elected from Cook County to the state legislature are favorable to legislation in the interests of the people, and not of any special medical sect. The candidates of each political party have been asked to sign a pledge that, if elected, they will do their utmost to maintain one standard for all practitioners of medicine, and to defeat legislation the object of which is to permit any cult to practice medicine at a standard of medical education lower than that already required by law; that they will support medical legislation in the interest of the people, but not of any special cult or school of practice; and that they will vote to retain in Illinois a one board supervision over all medical matters, including the examination upon an equal basis of all candidates for practice.

The bulletin publishes a complete list of the candidates, with crosses opposite the names of those who have signed the required pledge. Thirty-five out of seventy-six candidates have already done this. If other county societies do as well, the Illinois State Legislature should contain a large number of men who are pledged to support decent medical legislation.

THE RUSSIAN OGRE.

William Mayo of Rochester, Minnesota, has lately published in the *Journal Lancet*

an account of a short visit to the surgical clinics of Russia, Finland, Sweden, Norway, Denmark and Belgium. On account of the outbreak of the great war of the European nations, Mayo's comments on Russian surgery, and incidentally on Russian civilization and the Russian people, are of timely interest. Especially suggestive is the following passage with regard to the despair of the Finns at the attempt to Russianize Finland: "Whether Finland's fears will be justified, only future events can tell. The Russian people, so far as I could learn, are naturally kind, dignified, and faithful; and the educated Russian is the equal of any man. The rapid building of railways, highways and waterways in Russia will soon make a great difference in general education, as ease of communication is the greatest factor in civilization. Perhaps Finland may not be so badly off in the end."

THE MEDICAL LIBRARY IN DENVER.

In the minutes of the House of Delegates, on page 388, will be found a statement concerning the development of the library of the Colorado State Medical Society and its present condition. On another page (396) of this issue will be found a list of the books belonging to the State Society which have been deposited with the Library of the Medical Society of the City and County of Denver, and also the Rules of the Library governing the borrowing of books and periodicals. Next month we hope to publish a list of the current medical journals on file in the Library. We also publish a list of textbooks recently added to the Library.

The shortage on supplies of drugs produced in Germany is resulting in energetic attempts on the part of some concerns to push preparations said to have been manufactured in France.

Original Articles

A SHORT ADDRESS.

By Dr. Livingston Farrand, President of the University of Colorado, in Connection With the Annual Meeting of the State Society at Boulder on September 9, 10 and 11, 1914.

Mr. President and Members of the Colorado State Medical Society:

It has been my privilege at various times to welcome to the University conferences and gatherings of different kinds, but I do not think I need tell you what a particular personal pleasure it is to me to welcome the groups that are meeting here this week and particularly the State Medical Society, which brings them all under its wing. These gatherings represent movements and interests and problems which are to me the most important which now face this state.

I have no intention of making an elaborate address to you and yet when there are brought together a large number of physicians in this, our own Senate room, I do not intend to let them get away without saying one or two things which may be of importance in indicating the objects which we are all trying to attain.

My text has been given to me in the remarks of the President in his address this morning and in the words which the Dean has just spoken. I believe there are certain lines in which the medical profession of the United States is completely missing its great opportunity. It is a commonplace that the standpoint of medicine has been rapidly shifting during the last generation. The pitiful thing is that the rank and file of the medical profession is so slow to appreciate the change that is taking place. As physicians we are no longer concerned solely with the cure of the sick. We are concerned primarily with the prevention of disease, and treatment and cure is, after all, incidental to

that great end. Whatever individuals may say to the contrary, you and I may just as well recognize the fact that preventive medicine is the medicine of the future. Just the way in which it is to develop no man is wise enough to describe, but the fact is evident enough. Together with this development has come a responsibility for the medical practitioner which is immensely broader and heavier than that which has rested upon his shoulders heretofore. We are beginning to see with increasing clearness that the great world-problems of the day, those problems which underlie the widespread unrest, a striking example of which we have been witnessing in our own state for some years past and are now observing in the catastrophic condition in Europe—all these problems are to be reduced to social terms. Further, we are beginning to realize that the great social inequalities against which the world is struggling can be reduced in the last analysis to terms of physical well or ill-being. In other words, the problem of bodily health is the great problem of the day.

The inference is obvious. The medical profession which is charged with the responsibility of dealing expertly with the health of the community must also accept the responsibility of dealing intelligently with and even of assuming leadership in many movements which have hitherto been regarded as lying outside the pale of the profession and often as being beneath the dignity of the physician to notice. Yet this is the field in which the physician of today is missing his opportunity and putting aside a responsibility which properly belongs to him and which the laity will place upon his shoulders and force him to assume whether he will or no. The medical man who holds himself aloof from these great social problems which I say are grounded largely in conditions of physical well or ill being, is failing, in my

opinion, to fulfill his real function in the community.

These facts come to us with peculiar force in this university atmosphere. We are concerned not only with the training of practitioners of medicine or of law, but we are charged above all with the duty of inculcating principles of sound citizenship. While this is true in any institution of higher learning, it is particularly true in an institution founded and maintained by the state, and one which should be and must be responsive to and in touch with every serious movement of the day. We are feeling here more keenly than anywhere else the need of intelligent support of bodies of trained men who represent expert knowledge in every field. To you as members of the Colorado State Medical Society we feel we have a right to look for support in our endeavor to raise upon the soundest basis possible an institution upholding the highest standards which we know, for we are charged with the duty of training those who are to take your places when you are gone, and in this particular field those who are to maintain against every attack the best and highest ideals of the modern science of medicine.

And so I appeal to you to support us in the efforts which we are making and which we intend to make. We shall make mistakes but they will be mistakes of judgment, not of intention. The developments of the next decade will be so rapid as to be bewildering. Colorado demands, and with justice, that her University shall be not only abreast with this progress but qualified to assume leadership in it. We shall count, therefore, upon your support in securing means necessary to permit the University representing the highest ideals of education to fulfill its full and proper function.

I regard it as a significant sign that a distinguished member of the profession in this state is already so far on his way to

high official position in Washington. I do not know that six years in the United States Senate will be particularly conducive to the practice of medicine in Colorado, but I do know that he can render a great service in filling one of the greatest needs of the present day, namely, an adequate federal public health administration. We need a national department of health which shall influence and develop sound health administration in our several states, which in turn shall accomplish what is to my mind the crux of the situation, adequate health administration in our several local communities. If he can accomplish this through his service in Washington, he will have made a contribution of lasting benefit to his country.

Gentlemen, the opportunity we have here in Colorado is unique. Our problems are distinct and clearly outlined. We have much educational work yet to perform in order to produce a public opinion which will enable us to do those things which we know ought to be done, but the situation is distinctly encouraging. My confidence is absolute that working together, you in your several communities and we representing you in your University, we shall succeed in the near future in bringing to the health problems of Colorado the solution which the citizens demand and have a right to expect.

STUDIES IN THE PATHOLOGY OF EARLY GASTRIC CARCINOMA.*

L. B. Wilson, M. D.

Mayo Clinic, Rochester, Minnesota.

We are still far from either an explanation of the primary cause of or a demonstration of the initial cell changes in gastric carcinoma. Much of our study of cancer in the past has been focused on the

morphology of the gross lesion. The term "cancer" still suggests to most minds a large mass, though a moment's consideration compels the agreement that every cancer must start with a few cells. The finding of these cells and the determination of their malignant character is one of the most difficult tasks of the pathologist who is making a diagnosis while the surgeon waits. Fortunately, however, he is not called upon to search for minute cancers except where a gross lesion already exists. Were he to attempt to find beginning cancer in the stomach in which no gross lesion is present, he would have a yet more difficult task. DeWitt¹ has shown that the secreting surface of a single pyloric gland of the human stomach measures over 100 sq. mm. in area and that there are from 125 to 140 such glands opening on each sq. mm. of the surface of the mucous membrane of the human pylorus. She calculates from this that each sq. mm. of the surface of the mucous membrane of the pylorus represents approximately 13,500 sq. mm. of secreting glandular surface. It will thus be seen that if one were to set out to find the few cells showing the first changes indicating carcinoma and were not guided by any associated gross lesions, he would need to search with a microscope over an area more than 10,000 times greater than the exposed surface of the stomach, or a space of over 5,000 sq. ft. The hopelessness of such a needle-in-the-haystack search would prevent anyone undertaking it. It is possible that gastric cancers do originate in gastric mucosa which gives no grossly visible sign of irritation and it is conceivable that someone may sometime find such a cancer, though it will no doubt be accidental and on autopsy material. We have learned that the most likely place in which to find early gastric cancer is in the border of chronic ulcer in a patient of cancer age whose history has

*Read before the Colorado State Medical Society, Boulder, Colo., September 9, 1914

caused the clinician to make a diagnosis of gastric ulcer and the surgeon to excise or resect a portion of the stomach containing the lesion. The whole question then turns upon our ability to determine microscopically the presence of early cancer in association with non-cancerous lesions; or, in other words, to differentiate the early cell changes associated with malignancy from the late cell changes in non-cancerous lesions. This necessitates a comparison of normal embryonic and adult mucosa, and of acutely and chronically irritated mucosa, with the cells in the mucosa showing early cancerous change. As a basis for such a comparison, I have thought it desirable to bring together in a brief review those results of the more recent studies in the histogenesis, histology and physiology of the gastric mucosa which seem to be related to the site and morphology of the cell changes in early gastric carcinoma.

HISTOGENESIS.

The careful study of the embryology of the stomach from the histogenic standpoint, brilliantly begun by Sewall² and carried forward by many others, has fairly definitely settled the histogenesis of the gastric mucosa in detail.

All investigators are agreed that embryologically the gastric glands begin as downgrowths of the endoderm; that all of the cells lining the foveolae or pits are of this origin, and that most, if not all, of the cells lining the gland tubules are from the same source.

Kirk³, in describing the development of the glands of the pig, says. "At no stage does the epithelium acquire stratification except in the pars esophagea. All the cells reach from the basement membrane to the surface. There are no basal cells in the sense of cells which are shut off from the gastric lumen by higher cells."

The formation of new gastric glands

continues after birth. Toldt⁴ estimated that in the gastric mucosa of the child 10 years of age the total number of gland outgrowths of the stomach is approximately ten times what it is at birth and that the number of gland tubules is increased again almost ten-fold in the stomach of the adult, in which he estimated the total number as 25,179,000.

Concerning the method of renewal of gastric epithelium in the adult Bensley⁵, from a study of adult human material, makes the following important observation:

"The mitoses seem to be entirely confined to the cells of the bottom of the foveolae and adjacent portions of the gland tubule. I have not observed a single instance of cell division in surface epithelium nor in the cells at the bottom of the gland, although the cells near the foveola may divide even when they contain a good deal of secretion. The great mitotic activity at the juncture of the gland and foveolae, as well as the gradual transition from this point in both directions, led me to believe that this is the site of the reproduction of both the surface epithelium and glandular epithelium, both of which are probably replaced when lost by a gradual migration of cells from the point at which they are produced."

Summing up our knowledge of the normal development of the gastric mucous membrane as related to epithelial overgrowths, we note the following:

1. In this tissue we have epithelial cells which, though all developed from a single layer of embryonic endoderm, yet differentiate into cells of three definite morphologic types, the ovoidal parietal cells, the pyramidal chief cells, and the cylindrical surface cells, associated with three definite physiologic functions, the formation of acid, of zymogen and of mucus.

2. For the replacement of destroyed

epithelium, new cells are supplied by fission of already differentiated cells, a process which takes place most actively at the juncture of the foveola and the neck of the gland.

3. The formation of new gastric gland tubules continues into adult life. This takes place by active epithelial down-growth from the bottom of the foveolae or gastric pits.

HISTOLOGY.

Surface and Foveolae. Bensley⁶ says:

"The whole of the surface and walls of the foveolae gastricae are covered with a simple cylindrical epithelium, mucigenous in function and uniform in type throughout the stomach. The epithelium of the foveolae gastricae is similar to that of the free surface."

Fundic Glands. The fundic zone extends from within about 4 cm. of the esophagus to within about 5 cm. of the pylorus. The glands of the fundus are more or less slightly irregularly curved, branched tubules. The tubular portion of the gland proper consists of two portions, the narrow neck opening into the foveola and the body extending to the base of the gland. The cylindrical cells lining the foveolae pass by a gradual transition into the cells of the neck of the gland tubule.

Harvey⁷ has shown that there is no gradual transition from the chief cells of the neck to the chief cells of the body, but that there is an abrupt change. The parietal cells occur in all parts of the gland, although they may be found in the greatest numbers in the neck of the gland. In the foveolae only an occasional parietal cell may be seen. Mitotic divisions are extremely rare among the parietal cells. Parietal cells are probably the sole source of hydrochloric acid in gastric juice.

Harvey⁷, in studying canine material, notes that a few parietal cells react to chrome salt fixation and subsequent staining very much as do the chromaffin cells

in the suprarenal gland and various parts of the sympathetic system.

Pyloric Glands. The glands of the pylorus are much less closely set than in the fundus.

"The foveolae into which they open are narrow. They rapidly diminish in diameter to become narrow tubes which branch as they descend in the mucous membrane. Into the bottoms of these foveolar branches open the pyloric glands. These are composed of a varying number of branching wavy tubules into which open short pear-shaped acini." (Bensley⁶.)

Morphologically and physiologically the cells in the pyloric glands are regarded by Bensley⁸ and Harvey⁷ as equivalents of the mucous chief cells found in the necks of the fundus glands.

Cardiac Glands. The cardiac glands may extend from a point 3 mm. above the termination of the esophageal epithelium to a point 4 cm. below the termination of the esophageal epithelium. Bensley's⁵ conclusions from a study of the histology of these glands are as follows:

"1. Cardiac glands are mucous glands and are connected with the mucigenous epithelium of the surface by a transition, the middle point of which is formed by actively dividing cells, containing little mucin, which occur at the deeper constricted ends of the foveolar depressions."

"2. The cardiac gland cells are fundamentally different from the chief cells of the body of the fundus glands, inasmuch as the latter give none of the staining reactions of mucin, but, on the contrary, contain two characteristic substances which are phases in the elaboration of their secretion, i. e., zymogen granules and prozymogen."

"3. The cardiac gland cells are closely related to the mucous chief cells of the neck of the fundus gland and to the pyloric gland cells."

"4. The cardiac glands are decadent or

retrogressive structures derived from fundus glands by the disappearance of their more highly specialized cellular constituents, the zymogenic chief cells and the parietal cells."

"In the case of the human stomach, in the cardiac glands of which both parietal cells and ferment-forming chief cells are present in small numbers, the distinction between cardiac glands and fundus glands might be dispensed with altogether."

PHYSIOLOGY.

It is beyond the limits of the present review to go fully into the physiology of the gastric secretions. Our present knowledge, however, of the secretions of the various portions of the gastric mucous membrane as apparently significantly related to the histology of gastric cancer may be summarized as follows:

Pawlow⁹ seems to have shown that the true physiologic function of the surface epithelium of the stomach is the secretion of large quantities of mucus which by the dilution of noxious substances or the formation of inert chemical combinations therewith prevent their deleterious action on the more important elements of the underlying glands.

The gastric glands of the cardiac zone secrete only mucus (Bensley⁵) with an alkaline reaction (Greenwood¹⁰).

Of the glands of the fundic zone the chief cells furnish the digestive enzymes, pepsin and rennin, and the parietals some chloride of an organic base which on reaching the mouth of the gland in some way yields free HCl, though the parietal cells themselves, as shown by indicator stains, have an alkaline reaction (Harvey and Bensley¹¹). The degree of acidity of the gastric juice as secreted under relatively normal irritation is remarkably constant, the wide variations in the mixed juice being due to different degrees of neutralization of the acid by contact with

the alkaline mucous membrane or its secretion of alkaline mucus (Pawlow⁹).

Clowes and Jeffcott¹² have shown that there nearly always is an increase in the fixed chlorides of the gastric contents when free hydrochloric acid is absent.

With regard to the function of the pyloric glands there is considerable disagreement. Starling¹³ says: "A pyloric cul-de-sac yields a secretion which is neutral or slightly alkaline but which contains pepsin." Bensley⁶ says: "The theory of Heidenhain that the cells of the pyloric glands are pepsin-forming elements similar in character to the chief cells of the body of the fundic glands has been shown to be incorrect. * * * Morphologically and physiologically they are the equivalents of the mucous chief cells found in the necks of the fundic glands."

While the latter view is probably correct of the pyloric glands under normal conditions, the observation of Harvey⁷ that, at least in the fundic glands of the dog under pathologic conditions, the functions of zymogen and mucin-formation seem to be interchangeably assumed by the same cell, offers a possible explanation of the apparent discrepancies between different observers.

A number of writers have noted the presence of small amounts of glycogen in gastric epithelium in the presence of scirrhus and adenomatous cancer. Lubarsch¹⁴, who has made a most careful study of the pathologic significance of glycogen, does not consider it important in relation to malignancy of neoplasms.

PATHOLOGIC CELL CHANGES IN NON-CANCEROUS LESIONS.

Cohnheim¹⁵, in a study of the histology of specimens from cases of hyperacidity, notes that the epithelial changes consist principally of a disappearance of the principal cells and a proliferation of the parietal cells.

Harvey⁷ has studied simple forms of pathologic change in the stomach occurring in the gastric glands of dogs after gastroenterostomy. He notes that after gastroenterostomy the mucous membrane within 7 mm. of the line of operation undergoes the following changes:

"The body chief cells which are normally ferment-forming become transformed into mucus-forming cells. This is a gradual process, beginning immediately after the operation at the line of suture and extending radially about the anastomosis, reaching its maximum extent of 7 mm. about three weeks after the operation. After one month, a reverse transformation commences and the same cells again become ferment cells. This process is completed by six and a half months after operation. After that the gastric glands next to the duodenal glands at the anastomosis do not differ materially from those remote from it. This is a transformation of cells, not a replacement. Cells were found containing both mucus and zymogen. Since cells very highly specialized may undergo such transformations, the term 'specific' must be applied to them with care and only after prolonged study by the experimental method."

Hauser¹⁶ was the first to show that in gastric ulcer new tubular glands are formed, which are lined by cylindrical cells and may undergo cystic dilatation.

MacCarty¹⁷, in a study of the histology of human gastric ulcer, noted that:

"In the smallest ulcer, the bases of the cells rest regularly on a basement membrane and do not penetrate it. The relative proportion between the nucleus and protoplasm is that of a differentiated cell and is about one to three or one to four. The nuclei take the stain densely and are either oval or round and vary in size and shape between the normal limits of normal gastric gland nuclei, depending on the plane in which they are cut. They

are regular in shape and size. In the border of an ulcer which shows a more marked reaction to the irritant, the same picture may be seen accompanied by more extensive hyperplasia and increase in the relative proportion of the size of the nucleus to protoplasm. The nuclei stain less densely. In this condition, the line of demarcation between the stroma and the gland is usually not so regular. The glands may be, and often are, distended and distorted."

PATHOLOGIC CELL CHANGES IN GASTRIC CANCER.

One of the earliest descriptions of the tissue changes at the beginning of gastric cancer is that by Waldeyer (quoted by Welch¹⁸), who described in detail the origin of gastric cancer from the gastric tubules. According to his description, a group of gastric tubules, ten to twenty in number, send prolongations downward into the submucous coat. These tubular prolongations are filled with proliferating epithelial cells which make their way into the lymphatic spaces of the surrounding tissue and give origin to the cells in the cancerous alveoli.

Fenwick and Fenwick¹⁹ thus describe the histology of early gastric cancer.

"The earliest signs of a departure from the normal consist of an active proliferation of the epithelium of a small group of glands, which leads to distension of the tubules with cells of various shapes and sizes, obliteration of their lumina, and a marked alteration of their outlines. Many of the newly-formed cells exhibit particles of brownish black pigment, and the oxyntic cells of the neighboring glands are often affected in a similar manner. The epithelial overgrowth soon gives rise to elongation, twisting, and distortion of the tubules, which causes them to appear branched or racemose; while the ducts become choked with debris and their columnar cells filled with mucus. Up to this

period the morbid process closely resembles an adenoma; but it now displays its malignant character by the rupture of the basement membranes of the affected glands and escape of the epithelium which continues to penetrate the surrounding connective tissue in the form of branching columns similar in appearance to the peptic glands, but devoid of a *membrana propria*."

MacCarty and the writer²⁰, in a study of gastric ulcer and gastric carcinoma, noted that deep in the overhanging borders of chronic gastric ulcers in which the mucosa is proliferating, many groups of epithelial cells are exhibiting all stages of aberrant proliferation, with infiltration of the surrounding tissue.

From the preceding review it is obvious that much yet remains to be learned concerning the morbid histology, and especially concerning the finer cell changes in early gastric carcinoma. With the hope of perhaps being able to add somewhat to the data by which we may more confidently diagnose early malignant changes in the stomach, I have recently made a study of thin serial paraffin sections from specimens of early gastric carcinoma removed at operation in the Mayo Clinic. The lesions of these specimens involve the gastric glands of the pyloric zone, though many of them include also glands from the fundic zone. Without going at length into a discussion of the details of this study, I may state briefly that the following observations have been made:

1. One of the most commonly noted changes in chronic ulcers which show early carcinoma is cystic dilatation of the bases of the glands. These cysts in carcinomatous specimens are not lined with flattened epithelium, as one would expect in cysts due to blocking of the gland tubule, but they are lined with a single layer of large columnar cells, the nuclei of which are sometimes crescentic, but more

frequently rounded, showing that the cells which are apparently secreting mucus are yet able to empty themselves readily. This condition is shown in Fig. 1,

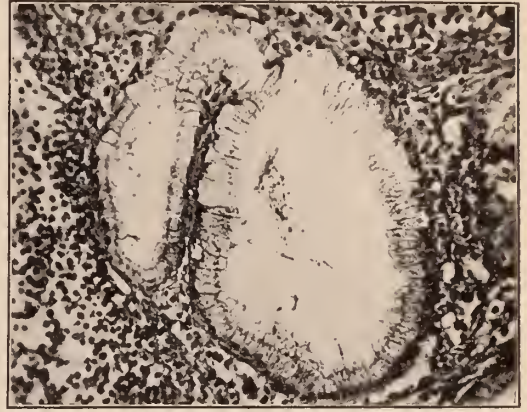


Fig. 1. Case 94647. High-power Magnification of Section Across Cyst of Pyloric Gland in Early Gastric Cancer. Columnar Cells Filled With Mucin; Crescentic Nuclei.

in which the nuclei are crescentic, and in Fig. 2, in which the nuclei are spherical.

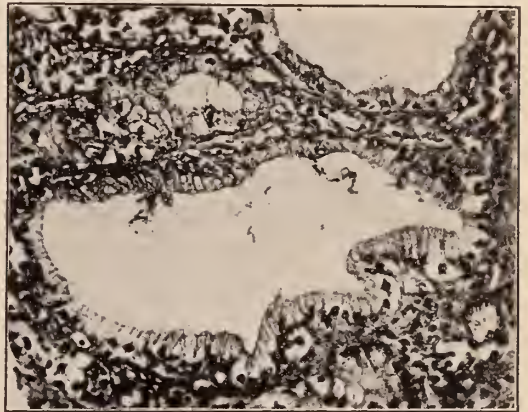


Fig. 2. Case 94647. Same Tissue as in Fig. 1, But With Cells Freely Discharging Their Mucin: Spherical Nuclei.

Many such cells show mitotic figures, an evidence that they are proliferating, a condition which is further shown by the greatly increased number of cells in a transverse section of a tubule. The fact that the epithelial cells of the gastric tubules may so markedly proliferate without

forming superimposed layers is in consonance with the well established observation that embryologically the epithelium of the gastric glands is always in a single layer. In view of the fact that a somewhat similar proliferation of the cylindrical cells of the gastric glands is seen also in the mucosa surrounding the borders of chronic ulcers in which there is no other evidence of malignancy, one must hesitate to diagnose carcinoma from such a condition alone.

2. Apparently the next step in the changes in the epithelium of the tubules in early gastric cancer is an increase in the number of layers of the lining cells. This seems to occur most frequently in the necks of the gland tubules. Associated with the superimposition of cells is a change from the pyramidal or cylindrical form to rhombohedral forms, a great increase in the size and irregularity of the nuclei and a marked increase in their staining affinity. This is well shown in Fig. 3.

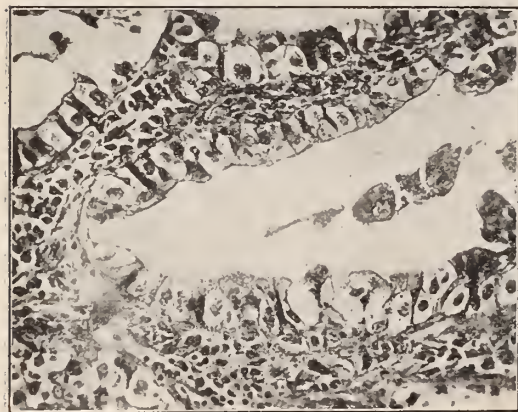


Fig. 3. Case 80863. Similar to Fig. 2, But With Beginning Multiplication of Layers of Epithelium.

The piling-up process may become quite extensive without the obliteration of the lumen, as is shown in Fig. 4.

In many instances the cells which have been crowded away from their supply of nutrition in the vessels early show degen-

erative changes. These changes consist in an obliteration of the outlines of the cyto-

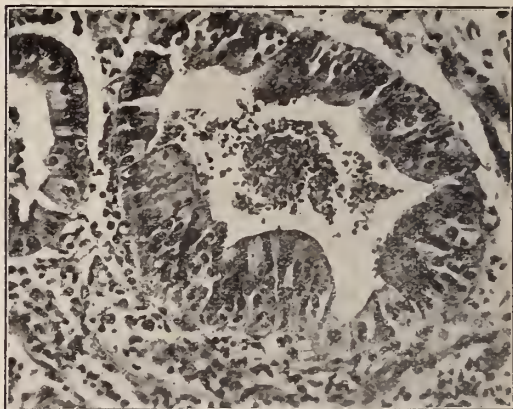


Fig. 4. Case 53784. Similar to Fig. 3, But With Marked Piling of Epithelium.

plasm and a destruction of its reticular network, a lessening of the affinity of the nuclei for stains and sometimes a mucoid degeneration.

The above described condition is the earliest which may be certainly diagnosed carcinoma.

3. The formation of mucin by the gland cells of the pylorus, if one may judge by its staining reactions, goes on in an apparently normal manner but in greatly increased amount even after cell proliferation is most marked. In a large percentage of cases, however, a change occurs in the mucin which materially alters its staining reaction. After formaldehyde or chrome salt fixation, one frequently sees cells containing small droplets which with Delafield's hematoxylin stain an intense clear blue, with no shading to brown or black like that of the nearby nuclei. These masses of mucin may fill the entire cell, in which case they show a reticulated structure made up of fine fibrils (Fig. 5). They are much the most numerous in the mucous cells of the pyloric gland tubules but they are found also in the mucous cells of the foveolae and of the surface epithelium. In a few instances they are

present in gland tubules in the fundic region in such a situation and of such

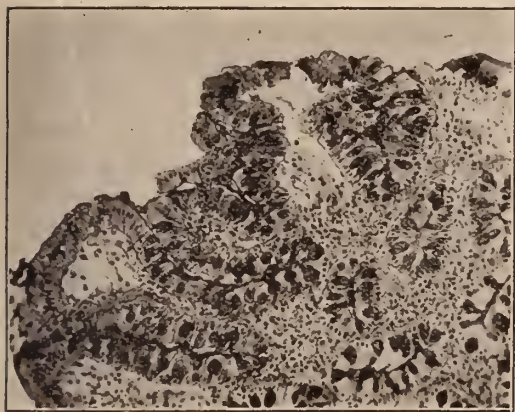


Fig. 5. Case 97051. Densely Staining Mucin Within Columnar Cells.

a shape as to make it almost certain that they are within parietal cells. They apparently also occur within the zymogen cells of the fundic tubules.

This mucigenous degeneration of the cells may go on to such an extent as to completely destroy all the cell outlines within a cross-section of a tubule. It is probably the beginning of mucoid cancer, though, from its frequency, it would seem improbable that all cases showing a primary degeneration of a few cells later become grossly mucoid. The intense staining reaction resembling that marking the presence of a carbonate would suggest that the substance is strongly alkaline, though mucin normally is neutral or feebly alkaline.

4. Occasionally, though rarely, the proliferating tubules instead of showing a multiplicity of layers of epithelial cells and instead of becoming greatly enlarged in transverse diameter, seem to elongate and coil up upon themselves within walls of fibrous connective tissue, producing adenomatous-like structures.

5. Not infrequently, in the interstices of the fibrous tissue at the margins of chronic ulcers under the borders of the

overhanging mucosa, are found groups of cells which may or may not surround any central opening but which give one the impression of being isolated, and pressed upon externally by the overgrowth of fibrous tissue. It is difficult to determine the complete occlusion or isolation of these groups of cells without careful reconstructions of serial sections. The cells in these groups often show by their mitoses and their metachromatic staining that they are actively proliferating. They certainly have all of the appearances of groups of cells which have penetrated into the muscularis in more advanced gastric cancer. It is hardly probable that they are advancing tips of new gastric glands.

6. In some specimens the overgrowth of the epithelium lining the necks of the glands seems to result in an increased twisting of the gland tubule. This, of course, can only be followed out in serial sections.

7. The proliferation of endothelium within the gastric glands may go on until the tubule is packed completely full of cells. (Fig. 6.) When this occurs, there

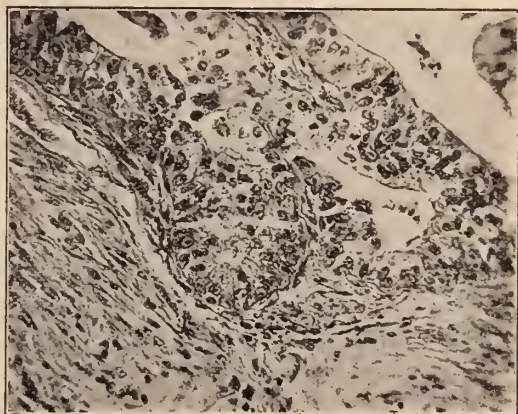


Fig. 6. Case 29584. Similar to Fig. 4, But With Infiltration of Stroma.

is nearly always infiltration of the epithelial cells into the surrounding connective tissue. This last stage seems to be the only positive criterion by which

some pathologists are willing to diagnose gastric cancer. To those of us who are seeing many cases in their early stages and following up the patient's history subsequent to operation, such pictures present only evidence of advanced, rather than early, cancer. If the surgeon waits for the presence of infiltration in gastric carcinoma before operating, he may hope only to give the patient a slightly more comfortable death by a palliative procedure.

PRACTICAL CONSIDERATIONS.

1. Although the surface of the secreting cells of the gastric glands is of enormous extent and carcinoma theoretically may start in any minute group of such cells, or even in a single cell, yet one only looks for early carcinoma in the presence of gross lesions. These lesions are ulcerative and are found ordinarily in the pyloric zone or, if in the fundic zone, more usually on the lesser curvature in the stomachs of patients most frequently between 30 and 60 years of age, who in a high percentage of cases have given a history suggesting chronic gastric ulcer. The absence of such a history, especially as indicated by pain, is, however, very common even in cases in which the pathologic condition proves beyond a doubt that a gastric ulcer must have been present for years.

2. Usually at the most thickened side of such an ulcer in the base of the overhanging mucous border, either at the necks of the glands or in their terminal subdivisions, are to be found the earliest evidences of malignant change.

3. When the histologic pictures above described are present, the pathologist is warranted in making a diagnosis of carcinoma before there is any infiltration of the interglandular tissue with epithelium and before the tubules have penetrated into the muscularis mucosae. When such infiltration has occurred and the epithelial cells are no longer held within the

membrana propria, there is nearly always an invasion also of the lymphatic vessels and adjacent lymphatic glands. Whatever may be our preconceived notions as to the relationship or lack of it between chronic gastric ulcer and gastric cancer, enough experience has now accumulated to show that we must recognize aberrant, intraglandular, epithelial proliferation as in most, if not all, cases an actual cancerous condition.

The clinician who does not insist that his long uncured chronic ulcer case shall be operated upon, and the surgeon who does not have made a microscopic examination of tissue from each thickened chronic ulcer with a crater over one centimeter in diameter before the performance of a simple gastroenterostomy on the stomach in which it was situated, are both equally negligent of the patient's well being.

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MEDICAL PROGRESS.

A Presidential Address.

BON O. ADAMS, M.D.,
PUEBLO, COLO.

To you, the members of The Pueblo County Medical Society, and to the other officers of this society with whom I have had the profitable pleasure of working during the past year, I wish to express a sincere appreciation both for the honor and privilege of presiding at your meetings, and for the hearty co-operation which you have given in the work of the society. By your solicitude for the good of the society, as well as your fraternal interest in your fellow practitioners (without the fold), you have added more than twenty per cent to the membership roll. You have maintained an average attendance of more than fifty per cent of the membership and

have held all of the regular and some special sessions.

The success of your past year's record is due in the main to the *impetus* of enthusiasm which was our legacy from the *preceding* year.

I bespeak for the society and its officers, whom you have elected tonight, your continued confidence and support during the ensuing year, and take this opportunity to *pledge* to *them* my own most hearty co-operation and faithful service in the ranks.

We hear much, on every hand, of the marvelous material progress of the world in these latter decades, and especially of the wonderful advancement of the Science and Art of our own profession. We certainly have reason to be proud of the Medical Science and the achievement of the Art of Surgery.

It is well, perhaps, if we turn occasionally from our pursuit of the strictly scientific or productive phase of our work, from considerations of diagnosis, prognosis and therapy. It is well, I say, at least once a year to relax our vigil for bacteria—our search for the indices and classification of the invading horde and our enthusiasm in marshalling our armies of drugs, serums, bacterins and antitoxins. It is well, I say, if at least once a year we turn from the scientific to the *cultural* or *historic* consideration of our profession of medicine.

And so—

It has been the custom and procedure, time out of mind, for presidential addresses to take the turn of historical recount of medical progress. I shall ask your indulgence to a twenty minute consideration of a mountainside view of the Medical World.

Standing on the portico of the part-way house, let us cast back our mental vision and review the vast stretch of plain and valley and foothills over which our fathers and brothers have toiled and sacrificed that we might from this vantage ground realize the exhilaration of breathing the pure at-

*Read before the Pueblo County Medical Society January 6, 1914.

mosphere of an *exact* science, free from the shackles of empiricism, and know the pleasure of applying the *principles* of such a science in the art of our profession. For it was only when medicine became established as an *exact* instead of an *empirical* science that surgery, the art or application of the principles, could make such marvelous advancement as has been achieved within the professional lives of most of us here.

The journey from the *then* to now, from Hippocrates to Pasteur, has been indeed a toilsome Pilgrim's Progress, beset at *many* times with *many* a Slough of Despond.

In the farthest horizon to the East stretches the Hippocratic Era, from which to our own times comes one of our most valuable and saving possessions, "The Oath." Would that we might, all of us, *keep* it more faithfully. Hippocrates and the school he led not only gave forth this oath, which is at once the soul and embodiment of all ethics, but it was *they* who systematized the then knowledge of the human body, the laws of its health and the means of combating its diseases. Hippocratic knowledge of anatomy was very meager indeed, although the great teacher laid the foundation for experimental physiology by feeding his patients on different articles of food, and then causing them to vomit, that he might observe the *relative stage* of digestion, at a given time, of these several articles. Hippocrates concerned himself with the prognosis as well as treatment of disease, as is evidenced by the opening sentence of his great work on Prognosis. He says, "The Best Physician appears to be the one who knows *how to know* before." Knowledge of prognosis and treatment were in his day the essential qualifications for a well equipped physician. That *later* member of the *trinity* which occupies such a *large share* of the present attentions of our European contemporaries, viz., *Diagnosis*, held a place of insignificant importance in the system of Hippocrates.

While the Era of this Great Greek Physician, 400 B. C., may have given us little of scientific worth, we may profit even today by the high ideals of *humanity* and *ethics* and *honesty* which were enunciated from Cos twenty-three centuries ago—a voice from this horizon of Medical History says: "Where there is love of humanity, there will be *love of the profession*;" again, "I have written this down deliberately for it is valuable to learn of unsuccessful experiments and to know the causes of their *non-success*." And yet again he has the honesty to write, even in the heat of debate and controversy, "My opponents' views will be assisted by the following considerations," etc. Much of the constructive systematization accomplished by Hippocrates and his school was nullified by the retrogressive philosophy of Aristotle and *his followers* in the Second Century before the Christian Era. Of Aristotle, whose teachings and influence so largely destroyed the magnificent work of Hippocrates, Dryden says:

"The longest tyranny that ever swayed
Was that wherein our ancestors betrayed
Their freeborn reason to the Stagyrite,
And made his torch their universal light."

On the crest of the second undulation, in the far away plain of Medical History, stands a third Great Greek, Galen, born at Pergamos, educated in the then most famous university of the earth, Alexandria. He soon followed the Glamor of Empire to Rome, where he founded the Galenic School of Research and Philosophy and wrote the classics of the science and art of healing. This was at the close of the second century of the Christian Era and 600 years this side of the first great groundswell. Galen it was who laid the foundation for modern knowledge of brain and nerve function and localization. By anatomical studies, dissections and physiological experiments he prepared the field for Horsley, Ferrier, Head, Sherrington and Cushing. Following Galen there was a recession of medical

knowledge, and so low did the new science and budding art fall *below the level* that even from our present vantage view we can scarcely see the bottom of the slough wherein lies that *strange monstrosity* known as the *Neo-Platonism*—the child of the union of Christianity and Paganism—a weird, fantastic figure representative of *sorcery, incantation and demons*. The Church fathers arrogated the prerogative of all knowledge and edicted that the teachings of science *must conform* to the established pronouncements of the Holy Dogmas. It was a *far* fall from the *eminence* upon which *Galen* had stood. Following this recession, the Mohammedan Ascendency in Arabia and Egypt did much to preserve the treasures of the science by translating the works of Hippocrates and Galen into Arabic, and adding many valuable discoveries in chemistry and materia-medica. These discoveries were made in their pursuit of *alchemy* for the purpose of *magic*, and with the hope of the discovery of the process of the *transmutation of metals*. They were extensive travelers and accurate observers and so their contribution to the *Materia-medica* was considerable, although their religion, which forbade the examination of the dead body, precluded the possibility of *any advancement in knowledge of anatomy*.

The important thing which the Arab influence did was to preserve in translation through the dark ages of Europe, i. e., from 600 A. D. to 1400 A. D., the valuable works of Hippocrates and Galen. *For during these dark ages the fanaticism of the fathers of the church had destroyed every vestige of truth and scientific knowledge which the schools of these two teachers had evolved and established*. It is to these translations preserved in the archives of the Moslems that medicine owes *much*, for but for these the Renaissance would have started with nothing instead of the rich fund of knowledge thus preserved. The

general revival of learning which is usually dated as following the fall of Constantinople in 1453 (which event was the primal cause of Columbus' activities and discoveries) was shared quite as *much* by the *science of medicine* as by the sciences and arts in general.

The first great undulation this side of the dark ages bears upon its crest the figure of the anatomist, *Vesalius*, a pupil of Sylvius, whose name still indicates the great lateral fissure of the brain. *Vesalius*, the son of an English mother, in his enthusiasm for dissecting material, robbed graves and stole corpses from the public gallows—and later arranged with the executioners for the bodies of criminals to be used as dissecting material. He studied Anatomy for five years at Padua and produced some voluminous works on the subject, and finally, it is said, while dissecting the body of a nobleman in Spain, he found the heart still beating. For this he was ordered by the inquisition to do a pilgrimage to Jerusalem, on which journey he died—not, however, until he had laid the foundation for our *Rockefeller Institute* and made possible the work of *Carrel*.

Fifteen years after the death of this great anatomist was born an English babe whose work was to carry forward the standard of medical knowledge and scientific research to a lofty pinnacle. And the galaxy of talent which surrounds the life of *William Harvey* shines brilliant even from those far off, as Holmes has called them, "Spacious times of the Great Elizabeth." He probably knew intimately such men as Shakespeare, Milton, Ben Jonson, Cowper, Dryden, Bacon, Kepler, Descartes, Spinoza and Malpighi. He had for his teacher at Padua the great Galileo.

In 1616 Harvey propounded and established by experiment and demonstration his famous theory of circulation of the blood. By logic and observation he proved the fact of the circulation, but it was not

until four years after his death that, in 1661, the capillary circulation was actually seen through the microscope by Malpighi in the lung of a frog, and by Leeuwenhoek in the fins and tail of a fish. Harvey's discovery of the circulation of the blood has been pronounced by the *analysts* of the *progress of human history* and of science as the most important demonstration in the factors influencing the *development of the race*. Dr. Baas says that Harvey stands *alone* with respect to his influence on world life—that his discovery should take an equal place with that of Copernicus as to the movement of the bodies of our solar system and the universe. Hunter says that the three greatest influences on world life progress are Copernicus' theory of the movement of the heavenly bodies, Columbus' discovery of America, and Wm. Harvey's discovery of the circulation of the blood.

For almost a century following Harvey little was accomplished. The science of medicine took a speculative turn and busied itself with the transcendental consideration of the composition of matter and theories as to the ultimate constituents of living tissue. The trend of investigation and conclusion during the century following Harvey is well summed up, it seems to me, in a sentence from the work of Haller, the English Physiologist of the middle of the Eighteenth Century, in which he says, "Our body is built up of a series of gelatinous and slimy substances." Although Malpighi, the Italian, had in 1661, as I have said, seen through his crude microscope the capillary circulation in the lung of a frog, and ten years later had seen the structural cell and described the minute structure of the kidney, yet it remained for the beginning of the Nineteenth Century to so perfect and compound the microscope as to make possible our intimate knowledge of tissues heretofore classed as "Slimy and gelatinous substances."

In the closing years of the Eighteenth and the first of the Nineteenth Century the great Jenner worked out by observation and experiment the far-reaching facts concerning the introduction into the blood of attenuated elements of disease and consequent immunity against that disease, the true significance and perhaps *universal* application of which we have not yet fully realized even in this day of serums, bacterins and vaccines—antibodies and indices. Oliver Wendell Holmes, in his characteristic way, summed up the situation with reference to microscopic possibilities prior to 1830, saying, "Nature had kept over all her inner workshop the forbidding inscription 'No admittance.' If any prying observers ventured to spy through this magnifying tube into the mysteries of her glands, canals and fluids, she covered up her work in *blinding mists* and *bewildering halos*, as the deities of old concealed their favorite heroes in moments of danger." But since Holmes wrote this, in the middle of the century, with the correction of chromatic aberrations by means of iris diaphragm, Abbé condenser and other niceties of adjustment, the delusive rainbow has disappeared and we see no longer as through a glass, darkly.

Virchow took a *long* stride toward our present vantage-ground when, owing directly to improvement in the means and methods of observation with the perfected microscope, he gave to the world in 1853 his theory of cellular pathology. It is unnecessary and not our purpose to analyze this theory, with all the beautiful by-paths into which its windings lead us. We may be allowed in passing to note that this conception converts our human body, the house in which we live, from a mysterious and monstrous fetich temple into a veritable moving menagerie and capacious aquarium wherein the animals are not kept for idle show, but each one in his proper place plays well his perfect part and *so com-*

pounds his function with his fellows as to elicit from mankind a high respect and such *devotion* as in *olden* times were given to the gods.

Virchow's pronouncements may be said to have placed the science and art of healing upon the high tableland of Progress, and since the acceptance of the theory of cellular organization and pathology, our profession has gained more ground *against disease* than in all the history of the race before.

Then comes upon the scene the commanding general of modern scientists to *deny* Lord Lytton's assertion that "Man is born on a battlefield." *Metchnikoff* maintains that man is the battlefield.

The multitude of great laboratories throughout the civilized world today are marshalling and organizing armies and manufacturing ammunition wherewith to take the field and combat those diseases which may invade from without or quell the insurrection and stop the interneene strife of the *elements within*. Verily did Jenner, in the beginning of the last century, unwittingly lay the *foundation for a therapy*, the scope and usefulness of which he little dreamed.

Lord Lister began his experiments with antiseptics in 1865. What would it *not* have *meant* to the victims of *our* civil war could he have worked a generation earlier. He was, as you know, signally honored by the recent International Medical Congress in London by his medallion being made the esenteheon of the Congress. It was but a short step this side of Lister's *antisepsis* to the foothill-platform of *asepsis* upon which we stand today. This has been builded *strong* and *sure* by the toil of such master workmen as Koeh, who in 1882 gave us our first view of the tuberele bacillus; Klebs, Loeffler, Pasteur, Metelmikoff, Ehrlich, Wright, and well among the leaders are *Major Ronald Ross* and our own Majors Walter Reed and Jesse Lazear, who gave

up their lives that others might live and "Greater love hath no man than this."

Heading the list of men who are converting the pestilential places of the tropics into pleasant and salubrious abodes is the man who has made possible the greatest physical accomplishment of the race, the severance of two continents. Col. W. C. Gorgas and his assistants have pulled the sting of the stegomyia and asepticized the anopheles—these men stand even shoulders with the great geodetic engineers who are completing the most marvelous masterpiece of human endeavor—The Panama Canal.

News Notes

President Farrand of the University of Colorado and Dr. Anthony J. Lanza of the United States Public Health Service were speakers at a luncheon of the members of the City Social Service Federation on October 6. Dr. Farrand discussed the plan for replacing the present State Board of Health by a State Commissioner of Health at the head of a well-organized Health Department. Dr. Farrand characterized the system of public health administration in Colorado as "about as inefficient as it could be." Dr. Lanza spoke of a survey which is being undertaken by the United States Government to determine the effects of immigration of tuberculous patients into Arizona, New Mexico and Colorado.

Dr. Hayes, Denver's deputy health commissioner, recently announced that inspectors would be detailed to investigate the number of babies born in the West Colfax district during the previous year, as there appeared to have been a failure on the part of physicians to report many of the births. It was further stated that offending physicians would be prosecuted on separate counts for each birth not duly reported. Subsequently the city health department obtained warrants for three well-known physicians on charges of failure to report, and convictions were obtained against two of the physicians.

J. W. Benadom pleaded guilty in the West Side Court to practicing medicine without a license, and was fined \$50 and costs, the total amount assessed being \$159. Benadom was charged on four counts, one of them being that he used the prefix "Dr." before his name, though having no license to practice in Colorado.

Dr. Alfred Max was acquitted of the charge of prescribing morphine for an habitual user of the drug, on the ground that his patient was a sufferer from asthma.

Charles Paul, a druggist, was fined \$50 and

costs for selling cocaine to habitual users, for peddling the drug on the streets and for filling prescriptions calling for cocaine.

Dr. W. A. Jayne was a sleeping occupant of the McPhee building when a fire broke out there at 3 a. m. on October 3rd. He found his escape cut off by the smoke, but was rescued by a fire department ladder. The fire broke out in a store room for paint.

Dr. James Rae Arneill was one of the American travelers in Europe who did not suffer appreciably from war conditions. He reached Naples on the 28th of July, the day on which Austria declared war on Servia. He visited Pavia to study the work of Forlanini on artificial pneumothorax, and also Genoa, Milan, and Venice. He was on his way to Geneva when he heard of the general outbreak, which had developed two days previously. After some time in Switzerland he traveled up through Paris (August 16th), Amiens and Boulogne to London (August 17th). He finally left London, with Mrs. Arneill, for home, on September 9th, after three times booking passage and again postponing his departure.

Dr. O. J. Pfeiffer has been the subject of many wonderful stories in the Denver papers as to his hairbreadth escapes in several capitals of Europe during the preliminaries of the war. He is said to have been "nearly" arrested as a spy, and to have seen thirteen alleged spies shot in one day in the streets of Bremen.

Dr. James Kelly of Golden, a resident of Jefferson county since 1861, and one of the oldest practitioners in the state, died on September 24th, aged eighty-seven years, at the home of his son, Dr. J. P. Kelly. He had served three terms as Mayor of Golden.

Several changes have recently been made in the faculty of the Medical Department of the University of Colorado. Drs. Sherman G. Bonney and William J. Rothwell are emeritus professors of medicine, and Drs. Thomas H. Hawkins and Edward J. Rogers emeritus professors of surgery. Dr. G. E. Neuhaus will give a course in psychiatry at the county hospital and Dr. E. Delehanty lectures on neurology to the juniors. Dr. Tracy Love is to give a course of sixteen lectures on preventive medicine, and Dr. Philip Hillkowitz a course of equal length on the principles of dietetics.

Dr. C. E. Tennant has been appointed special lecturer to the Golden School of Mines on "First Aid to the Injured."

Dr. L. L. Patterson has just returned from a very enjoyable trip to New Zealand. He is also a war victim. The boat he was to return in was requisitioned for the transport of troops. The boat in which he and Mrs. Patterson actually returned made a very circuitous voyage from fear of a number of German warships which were not seen but appear to have been scented in the air from afar. The danger was felt to be so imminent that the ship did not make its regular call at Hawaii but proceeded direct to Vancouver, which was reached with almost no coal in the bunkers.

On September 22nd, Drs. Amesse, Moleen, and W. H. C. Grant read papers before the Tri-County Medical Society on "Manifestations of

Rheumatism in Childhood," "Headache" and "Differential Diagnosis and Surgical Treatment of Diseases of the Abdomen, Chiefly of the Upper Quadrant."

Drs. Edward Jackson and T. E. Carmody will attend the meeting of the Academy of Ophthalmology and Oto-Laryngology in Boston at the middle of this month. Dr. W. C. Bane may go on to the same meeting after attending the meeting of the Railway Surgeons' Association in Chicago.

Dr. W. C. Mitchell returned near the end of September from a six weeks' rest at San Diego and San Francisco.

Dr. P. J. Pothuisje left in September for a tour of the surgical clinics in the East and at Rochester, Minn. He will return about November 1st.

Drs. Healy and McMahon have moved into a suite of five rooms on the fifth floor of the Majestic building. Dr. McMahon expects to do research work in tuberculosis from the laboratory standpoint.

Dr. and Mrs. A. C. Craig took a week's vacation in Salt Lake City at the end of September.

Dr. and Mrs. Karl Roehrig spent a month on the coast of Maine during July and August.

Drs. Scholtz and Lingenfelter went east in the latter half of September to attend the National Guard Officers' Association in Boston and the Association of Military Surgeons in Cincinnati and for a general tour.

Dr. R. M. Marshall recently returned to Denver after a clinical trip to Europe, where he made a special study of diseases of the heart. On his way back he spent two weeks in Virginia.

Dr. S. Fosdick Jones has been suffering from an attack of pneumonia, but is getting along nicely.

Dr. T. E. Carmody was called east in the early part of October by the death of his mother after a very short illness.

Drs. T. Leon Howard and O. S. Fowler both have new babies, boy and girl respectively.

Lawrence B. Hansen, aged forty-five, said to be a licensed physician, but of late an employé of the mechanical department of the Union Pacific railroad shops, was found dead on October 3rd in the kitchen of his home. His death was due to acute alcoholism.

Dr. J. P. Riddle of Hastings, Neb., is announced as successor at Glenwood Springs to the optician who had for a short time occupied the offices of the late Dr. Hutchinson. Dr. Riddle will limit his practice to eye, ear, nose and throat.

Dr. E. F. Eldridge of Grand Junction, a veteran practitioner, has announced his intention of moving to the coast on account of the state of his health.

Dr. J. U. Sickenberger of Grand Junction is taking a post-graduate course in the New York Polytechnic Post-Graduate School.

Dr. J. C. Darling, who had been located for three months at Paonia, has moved to Wray.

(Continued on Page 394.)

Minutes of the House of Delegates
of the
**Forty-Fourth Annual Meeting of the Colorado
State Medical Society**
Held at Boulder, September 9, 10 and 11, 1914.

**First Meeting of the House of
Delegates, September 8, 1914**

The House of Delegates met at the Boulderado Hotel and was called to order at 8:10 p. m. by the president, Dr. O. M. Gilbert, of Boulder.

The secretary called the roll and announced a quorum of twenty-two present.

The reading of the minutes of the last annual meeting was called for.

Secretary Black stated that inasmuch as the minutes had been published in Colorado Medicine for the month of October, 1913, he would move that the reading of them be dispensed with, and that they be approved as published with such exceptions as might be noted.

Seconded and carried.

Secretary Black read his annual report, which was referred to the Committee on Reports of Officers.

The report is as follows:

ANNUAL REPORT OF THE SECRETARY.

To the House of Delegates of the Colorado State Medical Society:

In completing this, my ninth year as secretary, I desire to express to the officers and members my thanks for having made the work so pleasant for me. I trust that any seeming impatience on my part with the secretaries of constituent societies has been understood by them as actuated by a desire on my part to raise the efficiency of the entire department of secretaries to the highest possible plane. So much depends upon the secretaries of our constituent societies that in retiring it may not be amiss to again point out that when a society finds a man who does this work satisfactorily, he should be prevailed upon to remain for a few years, and when he retires he should be expected to instruct his successor regarding the duties of the office. At present our constituent societies elect a secretary for only one year. This is a mistake, because a man only learns the duties of the office the first year. He should be elected for three years at the least. This would make for general improvements in our society affairs. There is a loss of membership every year because members are not notified when to pay dues. This occurs principally in societies where a change of secretaries occurs every year. I would, therefore, recommend that all our constituent societies elect their secretaries for a term of three years.

As a member of the Committee on Scientific Work, it occurs to me that the editor of Colorado Medicine should be an ex-officio member of that committee, and that he should attend

all their meetings. His advice and counsel would be of great value to the committee.

The following report shows in detail the membership and the total receipts from all sources:

Receipts.

From Reinstatements for 1913—

San Luis Valley.....	3	\$ 9.00
Mesa	2	6.00
Weld	1	3.00
Denver	5	15.00

11

\$ 33.00

From Dues for 1914.

Boulder	44	\$ 132.00
Clear Creek	2	6.00
Crowley	5	15.00
Delta	17	51.00
Denver	294	882.00
El Paso	81	243.00
Eastern Colorado	6	18.00
Fremont	21	63.00
Garfield	11	33.00
Huerfano	9	27.00
Lake	19	57.00
Las Animas	29	87.00
Larimer	17	51.00
Montrose	14	42.00
Morgan	9	27.00
Mesa	20	60.00
Northeast	12	36.00
Otero	17	51.00
Ouray	4	12.00
Prowers	12	36.00
Pueblo	59	177.00
Routt	7	21.00
San Juan	4	12.00
San Luis Valley.....	21	63.00
Teller	17	51.00
Tri	14	42.00
Weld	32	96.00

797

\$2,391.00

From Colorado Medicine.

Jan. 8, 1913, advertising from Dr. Elder.	\$ 130.65
March 20, 1914, advertising from Dr. Elder	138.57
June 19, 1914, advertising from Dr. Elder	124.05
July 24, 1914, advertising from Dr. Elder.	7.34
Aug. 26, 1914, one-half cost of illustrations from Dr. T. L. Howard	3.00
Aug. 27, 1914, advertising from Dr. Crisp	93.10

Sept. 2, 1914, advertising from Dr. Crisp	16.70	
Miscellaneous from exchange on checks .....	.15	\$ 513.56
		<hr/>
		\$2,937.56
Money extended over to Treasurer G. W. Miel	\$2,937.56	
		<hr/>
	\$2,937.56	\$2,937.56

Respectfully submitted,
MELVILLE BLACK, Secretary.

President Gilbert announced the following Reference Committees:

Committee on Reports of Officers—H. G. Wetherill, A. T. King, H. A. Smith.

Reports of Committees—T. E. Carmody, J. C. Chipman, H. L. Williams.

Committee on Miscellaneous Business—H. A. Black, J. C. Hughes, L. W. Bortree.

Committee on Appropriations—S. Fosdick Jones, E. A. Elder, A. Freudenthal.

Dr. George W. Miel, Denver, presented his report as treasurer, which was referred to the Reference Committee on Reports of Officers.

The report is as follows:

ANNUAL REPORT OF THE TREASURER, OCTOBER 7, 1913, TO SEPTEMBER 9, 1914.

Receipts.

Balance on hand Oct. 7, 1913..	\$2,384.47	
From secretary, through dues	2,424.15	
From secretary, through Journal	513.41	
Interest earned	75.47	\$5,397.50

Disbursements—Committee on Scientific Work. 1913.

Nov. 26—Carson-Harper Co., letter heads	\$ 2.75	
Stamped envelopes	2.25	\$ 5.00

Journal Maintenance.

1913.

Nov. 6—Western Newspaper Union, October edition..	\$ 123.70
Dec. 9—Western Newspaper Union, November edition	137.95
Dec. 11—P. & P. Bindery Co., postal cards for library use	3.75

1914.

Jan. 10—Western Newspaper Union, December edition	128.20
Feb. 5—Western Newspaper Union, January edition	120.90
March 17—Western Newspaper Union, February edition	163.20
April 27—Western Newspaper Union, March edition	174.75

May 7—Western Newspaper Union, April edition....	119.75	
June 8—Western Newspaper Union, May edition..	123.75	
July 9—Western Newspaper Union, June edition....	112.00	
July 9—Carson-Harper Co., letter heads	3.00	
July 20—Western Newspaper Union, July edition..	151.40	
July 27—Carson-Harper Co., stamped envelopes.....	13.00	
Aug. 31—Western Newspaper Union, August edition	163.98	
Western Press Clipping Service, October, 1913, to September, 1914	22.00	
Denver delivery of Journal, October, 1913, to September, 1914	27.50	
Mailing Journal, P. O. account, October, 1913, to September, 1914	15.00	
Dr. C. S. Elder, salary as editor, September 16, 1913, to June 16, 1914...	225.00	
Dr. W. H. Crisp, salary as editor, June 16, 1914, to August 16, 1914.....	50.00	
Dr. R. Hudston, salary as associate editor, January 1 to July 1, 1914.....	50.00	
Dr. O. Shere, salary as associate editor, January 1 to July 1, 1914.....	50.00	\$1,978.53

General Expenses.

1913.

Oct. 14—Expenses of Dr. Lewis L. McArthur, invited guest	\$ 75.00
Oct. 20—Rio Grande Railroad Co., claim for expenses incurred in advertising special train, cancelled by Society...	23.40
Nov. 19—Gehman & Watt, reporting forty-third annual convention	295.00
Nov. 26—W. H. Kistler Co., account book for treasurer	2.50
Nov. 26—Carson-Harper Co., letter heads for general use	8.50
Stamped envelopes for treasurer	3.25
Stamped envelopes for secretary	12.75
Dec. 9—Carson-Harper Co., stamped envelopes for secretary	6.00
Dec. 12—E. A. Van Gundy, engraving resolutions offered Dr. W. H. Sharp-ley	10.00

1914.

Jan. 9—Temple Drug Co., stamped envelopes, printing, for president..	23.68
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Feb. 6—Carson-Harper Co., delegates' and credential and annual report blanks	13.25	
March 17—Carson-Harper Co., printed postals, stamped envelopes, letter heads	8.50	
May 4—R. A. Brush Stationery Co., filing cabinet for secretary	37.45	
Sept. 23—Paul Weiss, sand glasses, for timing speakers	3.50	
Sept. 23.—Dr. Melville Black, salary as secretary, fiscal year ending Sept. 15	200.00	
Sept. 23—Carson-Harper Co., programs for forty-fourth annual convention	60.00	
Bank exchange . . . . .	.75	\$ 782.93
Cash balance forward	\$2,384.47	
Receipts during year	3,013.03	
Total	\$5,397.50	
Disbursements	2,766.76	
Cash balance	\$2,630.74	
Respectfully submitted, GEORGE W. MIEL, Treasurer.		

Dr. W. A. Jayne of Denver presented the following report:

REPORT OF THE DELEGATES TO THE AMERICAN MEDICAL ASSOCIATION.

September 8, 1914.

To the Members of the House of Delegates of the Colorado State Medical Society:

Gentlemen—Your delegates to the American Medical Association beg to report as follows:

Both of your delegates were present at each session of the House of Delegates of the American Medical Association at its recent meeting at Atlantic City, June 22-25, 1914. In addition to the regularly accredited delegates, Colorado was represented in the House by three other members of the Society, namely, Dr. Hubert Work, as member of the Judicial Council, and Drs. Melville Black and William M. Spitzer, as representing their respective sections.

The attendance was large, the registration being 3,958. The programs of the sections were well arranged, instructive, interesting and of high scientific value. The meeting on the whole was a most successful one from all points of view. The very considerable business of the Association was transacted in a careful manner with despatch and harmony. The yearly accumulation of business has now become so great that the time needed for the proper attention to it seriously curtails the opportunity of delegates to attend the scientific meetings, and it is proposed that the House meet on the Saturday previous to the general assembly, so that the business may be des-

patched in large measure before the scientific meetings are held.

The reports of officers of the Association show it to be in a most flourishing condition. The fellowship on May 1, 1914, was 41,029, being a net gain for the year of 3,116, while the membership of the Association, being the members of all constituent associations, numbers something more than 70,000. Sufficient time has not elapsed to permit of a fair judgment of the results which are likely to accrue from the change made last year in calling all those formerly members fellows and including all belonging to constituent associations as members without payment of dues.

The report of the Board of Trustees shows that the finances of the Association are in excellent shape. The Association is without debt and has a reserve fund of more than \$140,000. The activities of the Association are being diligently carried on along many lines with increasing efficiency. The report of the Council on Medical Education should be read by all interested in the advancement of the medical profession. It presents a record of remarkable accomplishment during the ten years of its existence. In 1904 there were some 160 medical colleges in the United States pursuing their work without supervision or inspection, most of them proprietary schools, depending upon the fees of students for existence and giving indifferent educational service, while several were diploma mills pure and simple. By the influence exercised upon public opinion by this Council, in conjunction with other less powerful agencies, practically all, if not all, these diploma mills have been suppressed, the number of medical schools in the United States has been reduced by elimination and consolidation to about 100, and those now in operation are inspected and classified according to their respective qualifications. The medical curriculum has been materially improved along model lines furnished by the Council. Medical education has been placed upon an entirely new basis and such that it is attracting state and private funds for its encouragement and support. The net results of the work of the Council are incalculable, but will be felt and appreciated in the higher quality of medical graduates of this country for many years to come. The work of the Council on Health and Public Instruction is being extended, and the Speakers' Bureau is having the active co-operation of many of the leaders of the medical profession and is accomplishing much good. The decisions of the Council on Pharmacy and Chemistry are having more weight and are being received by manufacturers with more respect as a final dictum, and therefore the propaganda for reform is progressing with greater effectiveness than ever before.

The Judicial Council is the moral balance wheel of the Association. It harmonizes the operation of its several component parts. It is vested with the judicial power of the Association to investigate and adjust all controversies arising under the constitution and by-laws and between its constituent associations. The work of the Council preserves the general good feel-

ing and cordial cooperation that exists throughout the organized medical profession of the United States, and the powers granted the Council have always been conservatively and wisely exercised. Experience has shown the need of some high court of appeal for cases arising within the jurisdiction of the constituent associations, a court far removed from local feeling and prejudice, and it is now proposed to extend the power of the Council and give it appellate jurisdiction over such cases. This requires the consent of the several constituent associations. An amendment to give the Council appellate jurisdiction over cases arising (a) between a constituent association and one of its component societies (b) between component societies of the same constituent association; (c) between a member of a constituent association and the component society to which said member belongs; (d) between members of different component societies and the same constituent association was introduced at the recent meeting of the House of Delegates and received the cordial endorsement of the reference committee to which it was referred. It is, however, held over one year for reference to the several constituent associations. The amendment has the hearty approval of your delegates, and they both recommend that the present House pass a resolution of approval before adjournment.

The scientific exhibit in the Exposition Building was of great interest and attracted much attention. The exhibit of the research work done on pellagra and the diagnosis of cancer by the X-ray was a center of unusual scientific interest. Specimens of radium and of radio-active products were shown. The National Dental Association presented most instructive specimens and charts, showing the work now done for mouth and tooth infections, including that of tuberculosis. The exhibits of books, medical and surgical, and dental supplies were very complete and well demonstrated. Your delegates desire to call especial attention to the great value of the Scientific Exhibit held yearly under the supervision of the American Medical Association, directed by Dr. Frank Wynn of Indiana. It exhibits much of the very careful, good work done for humanity by the medical profession of this country and fostered by the Association. For many years this exhibit has been of great excellence, giving all in attendance at the meetings an opportunity of devoting many hours usefully to scientific study with the assistance of abundant illustrations and skilled demonstrators. The exhibit of the present year was well on a par with those of previous years.

Respectfully submitted,

W. A. JAYNE,
L. H. McKINNIE,

Delegates to the American Medical Association.

Dr. Jayne's report was referred to the Reference Committee on Reports of Committees.

The report of the Committee on Credentials was called for.

Secretary Black, Chairman, stated that he had instituted this year a plan which followed

closely that of the American Medical Association. In the first place, he sent to the secretaries of the constituent societies throughout the State a blank form of annual report to the Colorado State Medical Society from the ——— Constituent Society, delegates and alternates for the year ———, the secretaries to fill in the names of the delegates and the first and second alternate. Under the By-laws it is absolutely necessary that each delegate shall have a first and second alternate, and if none can be present this place is to be declared vacant. The delegate is given a credential which is sent to the Secretary, filled out by the Secretary and handed to the delegate. This enables the delegate to turn it over to his alternate in the event the delegate cannot be present. This plan is destined unquestionably to be productive of a high degree of accuracy and is without complications.

The report was referred to the Committee on Reports of Committees.

Dr. J. W. Ames of Denver, Chairman, presented the Report of the Committee on Public Policy and Legislation, which was referred to the Committee on Reports of Committees. The report is as follows:

REPORT OF THE COMMITTEE ON PUBLIC POLICY AND LEGISLATION.

Mr. President and Members of the House of Delegates of the Colorado State Medical Society:

Gentlemen—I have the honor to report for the Committee on Public Policy and Legislation that the brief session of the State Assembly, convened to consider special measures only, afforded no opportunity for the consideration of public health problems. There were, in consequence, no transactions of your Committee during the past year.

Respectfully submitted.

J. W. AMESSE, Chairman.

Dr. Edward Jackson of Denver, Chairman, presented the following report, which was referred to the Committee on Reports of Committees:

REPORT OF THE COMMITTEE ON PUBLICATION.

To the House of Delegates of the Colorado State Medical Society:

Gentlemen—Although Colorado Medicine may be regarded as a kind of monthly report of progress from the Publication Committee, and although in some former years no other report has been made, it seems proper that at each annual meeting a formal report should be presented by the Committee.

In the eleven months that have elapsed since the last annual meeting of the Society, eleven numbers of Colorado Medicine have been issued, containing a total of 436 pages of reading matter and 112 pages of advertising matter. Of the 436 pages, 214, or almost one-half, were occupied with papers and discussions from the last annual meeting of the Society; 26½ pages were devoted to editorials, and almost 70 pages to the proceedings of constituent societies and the papers read before them. The remaining 126 pages have been used for book and other

reviews, excerpts from recent literature, news notes, correspondence and miscellaneous matter.

The total gross expense on behalf of Colorado Medicine was \$1,978.83. The net receipts from advertising were \$513.41, leaving \$1,465.42 the net total expense to the Society, \$96.53 less than the regular appropriation of \$2 per member for its publication. Just at the present time there is some reduction of revenue from advertising through suspension of advertising contracts by representatives of German manufacturers on account of the war. On the other hand, we can look for some increase in advertising through the activity of the bureau now established by the American Medical Association to assist the State Society Journals to secure advertising contracts. Such contracts are now bringing us about \$20 per month.

In view of the limited amount of money at the disposal of the Committee for the printing of Colorado Medicine, it is necessary to avoid unnecessary expense. With this in view the policy has been in the past to require authors who wished to have their articles illustrated to bear a large share of the expense. Instead of leaving it entirely to negotiations in the individual case, the Committee has now adopted the rule of allowing three dollars for the illustrations of any article requiring them; all expenses above this to be borne by the author, unless a special arrangement is made with the Committee. Three dollars will pay for three line illustrations by zinc etchings, or one half-tone of ordinary size.

With regard to political advertisements of candidates for office, seeking the support of the profession, these have been admitted as advertising at the regular rates. However much some of us may desire the election of men who will represent scientific medicine in the councils of the State or nation, this seems the only plan that will be absolutely fair to all parties, and to all members of our Society.

The determination of Dr. Charles S. Elder to retire from the position of Editor of Colorado Medicine compelled your Committee to seek a successor. After carefully considering all suggestions made, they reached the conclusion that the work would be best carried on by Dr. William H. Crisp of Denver, who was accordingly chosen, and assumed charge of the July issue. The Editor of Colorado Medicine has to do a large amount of difficult, important labor, often unappreciated by any except those in actual touch with the work. The financial compensation the Society can offer is entirely inadequate to procure the services that we have heretofore commanded, and hope to command in the future. In view of this the cordial cooperation of members of the Society in lightening the labor, and an expression of appreciation of its value may rightly be expected.

During his connection with the Journal Dr. Elder has furnished a series of clear, interesting, appropriate and suggestive editorial comments, in which we may well take pride. It is the hope of the Committee that Colorado Medicine may still have the benefit of his assistance in this direction. For his successor we ask

your support by positive assistance, and the constructive criticism of helpful suggestions.

EDWARD JACKSON, Chairman.

GEORGE A. MOLEEN.

A. J. MARKLEY.

Dr. D. P. Mayhew, of Colorado Springs, presented the following report, which was referred to the Committee on Reports of Committees:

REPORT OF THE COMMITTEE ON NECROLOGY.

Since the last meeting of this Society the Colorado State Medical Society has lost the ten following members:

Oct. 21, 1913.—Morris Ramsay Bowie of Somerset, Delta County, aged 27 years.

He was born in Topeka, Kansas, Feb. 14, 1886; but spent his boyhood in Gallup, New Mexico. He spent three years in the University of New Mexico and studied medicine in the University of Maryland, receiving the degree of M. D. in 1908. He was licensed in Colorado in 1908, and became a member of the State Medical Society in 1909. He practiced medicine at first in Paonia, and later in Somerset, Delta County. He died in Los Angeles, California. A man of high ideals, of a clean mind, and a firm friend.

Nov. 12, 1913.—James Edward Ray of Sugar City, Crowley County, aged 77 years.

He was born in Kentucky in 1836, and graduated Doctor of Medicine from the University of Pennsylvania in 1860. He practiced in Kentucky during the War of the Rebellion, and afterwards in Chicago and Kentucky. He came to Sugar City in 1900. He joined the State Medical Society in 1913. At the time of his death he was President of the Crowley County Medical Society, and highly esteemed throughout the Arkansas Valley, where he took an active part in public affairs.

Jan. 16, 1914.—Pliny H. Perkins of Colorado Springs, El Paso County, aged 41 years.

He graduated from Rush Medical School in 1897. He was licensed in Colorado in 1897, and became a member of the State Medical Society in 1906. He was a surgeon of ability.

Jan. 16, 1914.—Gustave R. Feil of Denver, aged 43 years.

He was born in Cleveland, Ohio, July 24, 1871, and received his degree in medicine from the University of Wooster in 1891. He practiced in Cleveland from 1891 to 1901, and was Instructor in Gynecology in the Cleveland College of Physicians and Surgeons. He was licensed in Colorado in 1891, and became a member of this Society in 1906. He was a member of the Medical Advisory Board of the National Jewish Hospital for Consumptives, and Consultant Physician to the Children's Hospital. A man of blunt, outspoken directness and honesty of mind.

April 29, 1914.—Pliny P. Lester of Walsenburg, Huerfano County, aged 42 years.

He was born in 1872 and graduated at Rush in 1903. He was licensed in Colorado in 1904, and became a member of the State Medical Society in 1910. He was a major in the medical corps of the National Guard of Colorado, and

was treacherously shot by striking miners while in the line of duty at Ludlow.

May 8, 1914.—Lewis Eugene Stanton of Sterling, Northeast Colorado Society, aged 55 years.

He was born in Belmont, Ohio, March 17, 1859. He was graduated from the Des Moines Medical College in 1886. He was licensed in Colorado in 1888.

June 6, 1914.—James F. Dawson of Platteville, Weld County, aged 39 years.

He was born in 1875, and received his degree of M. D. from the College of Physicians and Surgeons of Keokuk in 1897. He was licensed in Colorado the same year, and joined the State Medical Society in 1906. He had an extensive country practice, and was held in high esteem by the entire community.

June 10, 1914.—Thomas D. Palmer of Cañon City, Fremont County, aged 65 years.

He was born in Jackson, Miss., in Feb., 1850, and was graduated M. D. from the Jefferson Medical College in 1871. He practiced for some time in Dallas, Texas, and afterwards in Minden, Missouri. He came to Cañon City in 1879, and became a member of the State Medical Society in 1906. He had been for a number of years physician to the State Institution in Cañon City.

June 17, 1914.—James Garvin Schall of Leadville, Lake County, aged 37 years.

He was born in Kirkwood, Illinois, June 20, 1876. He graduated at the Hahnemann College of Medicine in Chicago in 1900, and practiced for some time in Olena, Illinois; and, after post-graduate work at Rush, settled in Oshkosh, Wis. He came to Leadville in 1910, and joined the State Medical Society in 1912. His practice was limited to the eye, ear and throat.

June 9, 1914.—Eugene A. Wheeler of the Medical Society of the City and County of Denver, died in Goldfield, Nevada, aged 58 years.

He graduated from the University of Denver in 1892, and was licensed by the State Board that year. He joined the State Society in 1906.

July 21, 1914.—T. L. Hutchinson of Glenwood Springs, Garfield County.

He was graduated from the Kansas City Medical School in 1902, and was licensed in Colorado in 1912.

The death of a physician causes a loss hard to estimate.

For his family and immediate circle of friends, it brings the grief of personal and irreparable loss; to the larger group of his patients, the sorrow of losing the trusted confidant and adviser; to the members of his own profession, the members of his county and state society, it is the break in the ranks of fellow workers, the loss of one devoted to a common cause—of relieving human suffering, increasing the efficiency of public health, or extending the bounds of knowledge.

With each of the members of this Society whose names have been read, some of us have lost the personal friend, the close comrade of his professional work; and as a Society we bear witness to our common bereavement.

The services of a physician are every year assuming more of a public character in control

and direction of the health of the community in which he lives. The death of an able physician is a general loss, and should be looked on with a public sorrow. It is therefore with more than usual grief that this Society is called on to record the loss of one of its members who gave his life not only in the line of his professional care of the injured, but in that more direct civic duty, which comes but rarely to any of us, the immediate service of the state—the citizen's highest opportunity—of yielding his own life that the state may have life and existence. To Dr. Lester came this call; and our grief at his killing is almost forgotten in the recognition of the honor he bequeathed his fellow members of this Society in the noble death under arms for our safety.

CARROLL E. EDSON, Chairman.

D. P. MAYHEW.

WM. N. BEGGS.

Dr. R. W. Corwin, of Pueblo, Chairman, presented the following report, which was referred to the Committee on Reports of Committees:

REPORT OF THE COMMITTEE ON HEALTH AND PUBLIC INSTRUCTION.

September 8, 1914.

To the Colorado State Medical Society:

Your Committee on Health and Public Instruction begs to submit the following report:

Last year your Committee interested itself in suggesting literature for school and public libraries, most suitable to promote hygienic and sanitary knowledge and illustrate the importance of the observation of the laws of health and heredity.

This year your Committee has endeavored to disseminate some of the knowledge by publishing facts regarding health and education.

Some one may ask, what has this Society to do with public school education? Much. Only by education can we hope to cope with the problems that conserve vitality.

Municipal health work is just coming into its own. People are beginning to realize its worth.

Unless the child can be educated—in other words, kept in school—long enough to learn that which will be of value to it in after years, progress is doomed.

The physician must continue to take the lead in benefiting mankind, especially physically. As population increases, complications multiply—sanitation and hygiene must be better understood, as well as better supervised. Educating the public is the only hope of enforcing health laws. Neglect the education of the child and our efforts will be fruitless.

The duty of the Society in this matter is plain. It should use its greatest effort to prepare the future public.

Professor Sargent of the Agricultural College has been spending much time and energy studying the educational losses to the state. We have watched his work and listened to his explanation of charts with deep interest. He states that 80 per cent (69,010) of all country school children fail to pass the eighth grade. This is a tremendous loss to the state.

If diseases continue to increase at their present ratio, due largely to business dissipation or

over-taxation of physical strength, our efforts will be of vital importance.

It may be of interest to some of the members of this Society to learn the results of the investigations made by the special committees appointed by the American Medical Association and National Education Association, who for the last three years have been working jointly upon sanitation of the rural school.

Investigations of rural school conditions were made throughout the country. Photographs were made of rural school-houses, interior and exterior views, and of out-buildings and grounds. Many of the photographs illustrate the sad need of a more careful sanitary inspection, others show indifference, and some prove positive ignorance. The following are facts collected from the comprehensive data:

Country school children are more unhealthy than city school children.

Wherever urban and rural statistics were compared, the country children were found to be anywhere from 5 to 30 per cent more defective than the city school children, in spite of all sanitary deficiencies of the slums of the largest and most crowded cities, and all the benefits that country life is supposed to bestow.

Out of 1831 rural districts of Pennsylvania, 75 per cent of 294,427 children need medical treatment. Of New York's 287,469, 72 per cent need medical treatment.

Another matter of no little importance in sustaining the health of the school child, which was presented to the National Council of Education and Superintendents of the N. E. A. at Richmond, last March, is the architecture of the school building, with special attention given to lighting of the room. Investigation of the unit plan, or group system, was recommended. Beginning with a central hall, or auditorium, the needs of the community are met by the addition of new buildings on either side of this hall. Additions are made as required. The number of school rooms may be increased, meeting the demand, which is not the case with a building of many rooms. The many-roomed building is usually ahead of or behind the needs of the district; there are vacant rooms intended for future requirements or crowded rooms waiting for the school board to build. Under the unit plan there is less waste room; there is less chance of fire; in case of fire the danger to pupils is reduced to a minimum; and there is less chance for loss of property or damage by water. Light and ventilation may be ideal. No large hallways to accumulate dirt. Less work for the janitor and no sweeping of dust and other refuse from one floor down upon another. Recess may be taken out of doors at any time without disturbing classes in other rooms. There is greater field for individuality on the part of both teachers and pupils. This plan is no longer in the experimental stage, school plants of this stage being in successful operation in this and other states.

Still another educational move of hygienic importance is the more general introduction of first-aid in the public schools. This is not a

new idea. Many schools, as well as railroads, industrial plants and large stores, give instruction in first-aid, but not until this year perhaps has first-aid been extended to the kindergarten and first grade pupils, as has been, and is being, done in some of the public schools in the southern part of this state.

Respectfully submitted,

R. W. CORWIN, Chairman.
W. H. SWAN.
E. STUVER.
LUCY M. WOOD.

Dr. W. A. Jayne, of Denver, Chairman of the Committee for the Awarding of a Prize of \$100 for Original Research, reported that two papers were submitted for the examination of the Committee, both of which were carefully considered, but the Committee decided to make no award.

The report was referred to the Committee on Reports of Committees.

Dr. George W. Miel, of Denver, Chairman, presented the following report, which was referred to the Committee on Reports of Committees:

REPORT OF THE COMMITTEE TO COOPERATE WITH THE STATE PHARMACAL ASSOCIATION.

September 8, 1914.

To the House of Delegates of the Colorado State Medical Society:

The following is the report of your Committee, appointed to cooperate with a committee representing the Colorado Pharmacal Association:

After joint conference we as a Committee, recognizing the growing prevalence of drug addictions, and their disastrous and demoralizing effect on the community, feel the urgent need of legislation for the purpose of curtailing the sale and use of habit-forming drugs, and providing for the care of those already addicted to their use, by the establishment of suitable quarters for their proper treatment and care at public expense.

We believe it to be further advisable that provision be made for the voluntary or judicial commitment of such persons.

We also believe that, with the enactment of such ordinances, or provisional laws, the sale of narcotics will be more effectively controlled.

The committee representing the Colorado Pharmacal Association will also make this report to their organization, and joint work in furtherance is contemplated. This may be through the preparation of a new bill to be offered the Legislature for passage, regulating the sale of habit-forming drugs; and another bill asking provision for the care and treatment of habitués at the expense of the state; the former prepared by and offered through the Colorado Pharmacal Association, the Colorado State Medical Society taking the same steps with the latter; the passage of both furthered jointly.

Until both measures are met, neither will be effective. To cut off the supply of these drugs

to those dependent, we feel imposes provision for treatment at option.

We trust this appeals; and that recognizing the causes this society will see the needs and lend its energy and influence toward a remedy.

In conclusion, we respectfully ask the incoming president of this society to appoint a new committee to continue work in this relation.

GEORGE W. MIEL,
CRUM EPLER,
GEORGE A. MOLEEN.

The foregoing report in letter and substance meets with the entire approval of the representatives of the Colorado Pharmacal Association.

C. VAN ZANDT,
Chairman.
H. B. SE CHEVERELL,
JOHN MARTIN,
D. C. TAYLOR.

Dr. G. H. Cattermole, chairman of the local committee of arrangements, stated that the program of entertainment had been sent to all members, and tomorrow there would be extra copies of it distributed. The Boulder Club and Elks' Club were open to the members. The first entertainment would be for the ladies tomorrow afternoon. There would be a reception at the Boulderado hotel for the ladies, followed after the scientific meeting by an auto ride, which would end at the Chautauqua grounds, where there would be a barbecue given in the evening.

Under "New Business," Secretary Black read a communication from the Utah State Medical Association with reference to the feasibility of secretaries of the State Medical Societies becoming members of the House of Delegates of the American Medical Association, and moved that this matter be submitted to the Committee on Miscellaneous Business to be acted upon later.

Seconded and carried, and the matter was so referred.

The following were nominated and elected members of the Nominating Committee by the President casting the ballot of the House of Delegates as directed:

H. A. Black, W. L. Bortree, J. C. Hughes, T. E. Carmody and H. A. Smith.

Dr. W. A. Jayne, of Denver, brought up the matter of the library of the State Medical Society, which was being cared for by the Medical Society of the City and County of Denver.

LIBRARY OF THE COLORADO STATE MEDICAL SOCIETY.

Remarks by Dr. W. A. Jayne, Denver.

Gentlemen of the House of Delegates:

If I may I desire to call the attention of this House to a very considerable property belonging to this Society upon which no report has been made within recent years. Very early in the history of this Society, in fact at its first meeting in 1871, the office of librarian was created. Dr. Horace O. Dodge, who is I believe still a resident of this city of Boulder, was elected to fill it, and the Society thus declared its intention of creating a medical library. Reports of the accumulations in the hands of the

librarian were made from time to time, but by the attrition of time and through lack of attention they have been dissipated. At this time the early records which were printed yearly in the form of transactions are so exceedingly scarce that only two copies of these first numbers are positively known to us and some of the numbers of later years are few. There are, however, two perfect files and these are being jealously guarded. One of the copies of the first number came into the possession of the Society very recently by the courtesy of Dr. Eugene Gehrung, a charter member, by the hand of Dr. Wetherill. I speak of this to show that notwithstanding the determined effort that was made to preserve the records and create a library it was doomed to failure because the Society had no safe depository. It is only during the past eight or ten years that the records and books of the Society have had a permanent abiding place where they are properly cared for.

With the advent of Colorado Medicine there came to it books for review and these, the property of the State Society, according to arrangements made with this House several years ago, are deposited with the medical library in Denver, then belonging to the Denver Academy of Medicine but now owned by the Medical Society of the City and County of Denver. All books thus received, after being reviewed for the journal are stamped with the name of the State Medical Society and accessioned in a special book. When I last inspected this book there were some five hundred odd volumes credited to the State Society. These volumes are held in trust for this Society and are always accessible to members. Members living outside of Denver may have any one of these books sent to them upon application, the applicant paying the transportation charges both ways. There is one feature about these books that should be mentioned. Text books as we well know grow old and useless very soon. A text book new today is old and discarded in two or three years and especially if a new edition has been published. Many of these books came to us several years ago and are now comparatively old, so that their monetary value is small, nevertheless they form an interesting nucleus and may be the beginning of a great medical library in Colorado if used in connection with another library.

The Medical Society of the City and County of Denver now has a very considerable library, and one that is strong in current medical literature. Our journal files are being filled up, and we have a goodly supply of books on medical biography and history, and many of the medical classics. This library is now growing rapidly, and many very important additions have been made during the past six months, thanks to the generosity of the members of our County Medical Society and friends. Until recently the gaps in our files of journals were many and large and some prominent journals were entirely lacking. As a consequence members were often discouraged when applying for references by finding they could not be supplied. This is all being rapidly changed, the

gaps have been filled in many instances, the files have been lengthened and new journals with years of back numbers have been added. More than \$3,000.00 has been expended during the past six months, and now members may find the most important medical journals on file containing the current literature on all subjects in medicine; and not less than about 85 to 90 per cent of the references called for can be furnished at once.

I take this opportunity of calling the attention of the members of the State Society to their own property, and to say for the Medical Society of the City and County of Denver and its Trustees that members of this State Society are always welcome at the library and we shall be pleased to have them make use of it. The Society extends its privileges to all members of the State Society so that in addition to their own books they have equal use of the much larger collection in this library upon application and payment of transportation. I may say, furthermore, that it is the constant effort of the Trustees to make this library more and more efficient, more and more useful to members, valuable for reference and a credit to the medical profession of the State.

This is all leading up to the suggestion I wish to make. This Society has now in its treasury according to the report submitted here tonight \$2,630.74, if my memory serves me. This is a considerable amount which has been increasing slowly but steadily of late years. Last year the Society appropriated three hundred dollars additional for Colorado Medicine which the committee did not use, and the Committee on Award of the one hundred dollar prize has made no award this year, so that these monies are still in the treasury. So far as I have read the minutes of the State Society I do not know of a dollar the Society has ever expended in support of its library. Now that we are doing so much in Denver for our own library it would appear to be an opportune time for the State Society to do something to aid the good work and build up its own collection. I believe this Society can very well appropriate one and better two hundred dollars for the purchase of books. It is very wise for the Society to have a goodly surplus in its treasury to fall back upon and this in my judgment should be kept at not less than \$2,000.00 if possible. Personally I believe the amount suggested may properly be expended for library purposes, and I hope this House of Delegates will agree with me and deem it wise to make the appropriation.

Secretary Black moved that an appropriation of \$100.00 be made by the House of Delegates to purchase additional books to be deposited with the custodian, namely, the Medical Society of the City and County of Denver, as the property of the State Society.

Motion seconded by Dr. Ingraham and carried, and the report of Dr. Jayne and motion of Secretary Black were referred to the Committee on Miscellaneous Business.

On motion, the House of Delegates adjourned until 8:00 a. m. Wednesday.

Second Meeting of the House of Delegates, September 9, 1914

The House of Delegates met at 8:15 a. m. and was called to order by President Gilbert.

The Secretary called the roll and announced a quorum present.

The minutes of the previous meeting were read and approved.

Under the head of "New Business," Dr. H. G. Wetherill referred to the probable election of Dr. Hubert H. Work for United States Senator, and said the members of the medical profession of Colorado knew how capable and efficient Dr. Work was, and he expressed the hope that every member of the Colorado State Medical Society would do everything he possibly could to promote the election of Dr. Work.

As there was no further business to come before the meeting at this time, on motion the House of Delegates adjourned until 8 a. m. Thursday.

Third Meeting of the House of Delegates, September 10, 1914

The House of Delegates met at 8:15 a. m. and was called to order by President Gilbert.

The Secretary called the roll and announced a quorum present.

The minutes of the previous meeting were read and approved.

Dr. H. A. Black, Chairman of the Committee on Miscellaneous Business, made the following report:

REPORT OF THE COMMITTEE ON MISCELLANEOUS BUSINESS.

Your Committee to whom was referred the motion made by Dr. Melville Black, for an appropriation of \$100 to purchase additional books for the library of the Colorado State Medical Society, have had the same under consideration and beg leave to report that they recommend the passage of the motion with the substitution of \$200 in place of \$100.

Dr. Black accepted the amendment.

On motion of Dr. Jones, seconded by Dr. Dodge, the recommendation of the Committee was concurred in.

Dr. H. A. Black, Chairman of the Committee on Miscellaneous Business, further reported for the Committee as follows:

Your Committee to whom was referred the motion of Dr. Melville Black relative to a resolution from the Utah State Medical Association, begs to report as follows:

Your Committee has given this matter careful consideration. It has held a meeting at which all of the men most prominent in the work of the American Medical Association and members of the Colorado State Medical Society were asked to appear before the Committee, and after deliberation upon what they had to say, your Committee unanimously reports that this resolution ought not to pass.

On motion of Dr. Black, seconded by Dr.

Sharpley, the report of the Committee was adopted.

Dr. H. G. Wetherill, Chairman of the Committee on Reports of Officers, made the following report:

REPORT OF THE COMMITTEE ON REPORTS OF OFFICERS.

In regard to the recommendation of the delegates of the Colorado State Medical Society to the American Medical Association, it appears that in the House of Delegates of the American Medical Association an effort has been made to establish an Appellate Court in the Judicial Council of that body, to which controversies in the constituent and other societies relating to the American Medical Association may be made. Your Committee has decided to recommend the adoption of the following resolution referring to this matter:

Resolved, That the House of Delegates of the Colorado State Medical Society hereby approves and consents to the amendment proposed by the House of Delegates of the American Medical Association, by which the power of appellate jurisdiction is given to the Judicial Council of the American Medical Association over cases and controversies arising within the jurisdiction of constituent associations and their component societies.

H. G. WETHERILL,
A. T. KING,
HARRY A. SMITH.

It was moved by Dr. Chipman, seconded by Dr. Black, that the report be adopted. Carried.

Dr. Wetherill also reported for the Committee as follows:

In the report of the Secretary we find the following recommendations in regard to secretaries of constituent societies: That the secretary is expected to instruct his successor regarding the duties of the office. He should be elected for three years. At present the constituent societies elect their secretaries for only one year. This is a mistake, as these men cannot become familiar with the duties of the office in one year. The Secretary recommends that all constituent societies elect their secretaries for the term of three years.

This recommendation meets with the approval of the Committee, and we recommend that it be adopted.

It was moved by Dr. Dodge and seconded by Dr. Carmody that the report be adopted. Carried.

Dr. Wetherill: We further report the recommendation that as a member of the Committee on Scientific Work, the editor of Colorado Medicine should be ex-officio a member and attend all meetings.

This meets with the very hearty endorsement of the Committee, and we advise that a resolution be passed recommending it.

On motion of Dr. Ingraham, seconded by Dr. Bortree, the report was adopted.

Dr. Wetherill: Your Committee wishes to propose the following resolution in regard to Dr. Melville Black:

Whereas, Dr. Melville Black has served this Society as Secretary faithfully for nine years

at very great personal inconvenience and sacrifice, and

Whereas, Your Committee feels that much of the success of the Society during these years has been due to his indefatigable work in its behalf, we hereby recommend in recognition and appreciation of this great service to our organization, that a rising vote of thanks be accorded him at this time.

H. G. WETHERILL,
A. T. KING,
HARRY A. SMITH.

It was moved and seconded that the resolution be adopted. Unanimously carried.

Dr. Black: I thank you most heartily. (Applause.)

Dr. Wetherill: Your Committee finds in the admirable address of the President much food for reflection and many things which meet our commendation. There are two or three points in regard to which we think some action should be taken and brought to the attention of the House of Delegates.

(1) The President of the Society recommends a Department of Public Health with a commissioner of public health and a Public Health Council of six members to be created for the State of Colorado, one of the six members to be a sanitary engineer, the specific purpose of this being for the benefit of the people and not the profession.

(2) The President urges (after referring to a law in the State of Texas) the necessity for proper provision for the care of the indigent sick and those persons afflicted with communicable diseases, including tuberculosis, and recommends the passage of a hospital law similar to that passed two years ago by the State of Texas, namely: each county may provide, and each of those having a city of 10,000 population must provide, a county hospital, and in the latter case must provide special buildings for contagious diseases and for tuberculous patients. To those hospitals any resident of the county, rich or poor, is to be admitted, but the Board of Managers, appointed by the County Commissioners, determine whether the patient is able to pay in part or whole for his maintenance.

The Committee endorses the recommendations of the President in this regard and recommends that these suggestions of the President meet with the approval of the House of Delegates.

Dr. Melville Black moved the adoption of the recommendations. Seconded and carried.

Dr. Melville Black suggested that a definite motion be made with regard to what is to be referred to the Committee on Public Policy and Legislation.

Accordingly, Dr. Wetherill moved that the questions referred to in the President's address be referred to the Committee on Public Policy and Legislation, and that that Committee be requested to draft a bill to cover the enactment of these points into a law. Seconded and carried.

Dr. Wetherill: Inasmuch as Dr. Gilbert as President of the Society this year is ex-officio a member of the Committee on Public Pol-

icy and Legislation, I should like to move that as ex-President of the Society he be retained as a member of this Committee during the coming year, so that the suggestions made by him may be fully explained to and carried out by this Committee. Seconded.

Dr. Melville Black stated that there was no one more familiar with the absolute needs in this particular than Dr. Gilbert, and inasmuch as he had this matter so much at heart and had been expending a considerable amount of time and energy upon seeing such a bill brought into execution, he would move that Dr. Gilbert be recommended to the Nominating Committee as Chairman.

The amendment was seconded, accepted, and the original motion as amended was carried.

President Gilbert stated that under Special Committees he had appointed Dr. Charles B. Dyde of Greeley as a committee of one to look into the matter of medical defense and report to the House of Delegates.

The time for the scientific session having arrived, on motion the House of Delegates took a recess until 5 p. m.

Fourth Meeting of the House of Delegates, September 10, 1914

The House reconvened at 5 p. m. and was called to order by President Gilbert.

The Secretary called the roll and announced a quorum present.

Dr. Dyde presented his report as a special committee of one in regard to medical defense. He read letters from the secretaries of various state societies in which the medical defense plan is in operation.

Dr. Melville Black moved that the report be accepted. Seconded.

After discussion, which was participated in by several delegates, Dr. Hughes moved as an amendment that the report be adopted, and that a committee of three be appointed to investigate this matter and report to the House of Delegates with definite recommendations at the next annual meeting of the Society.

The amendment was second, accepted and after further discussion the original motion as amended was put and carried.

The President appointed on this Committee Drs. Wetherill, Dyde and Melville Black.

Secretary Black read the following telegram from the Colorado State Pharmacal Association:

Pueblo, Colo., Sept. 9, 1914.

To the Colorado State Medical Society, Boulder, Colorado:

The Colorado Pharmacal Association in convention assembled extends greetings to the Colorado State Medical Society and again pledges the cooperation of its members in every reasonable measure in the interest of suffering humanity. The following resolution was this day unanimously adopted by our Association:

Whereas, We recognize the demoralizing effects and the great harm that comes to our profession and the public at large through the indiscriminate sale and use of narcotics and habit-forming drugs; be it

Resolved, By the Colorado Pharmacal Association in convention assembled, That we are opposed to the sale of such drugs except upon the written prescription of regularly licensed practicing physicians, and we favor the enforcement of such anti-narcotic laws as will put a stop to this evil practice.

THE COLORADO PHARMACAL ASSOCIATION.

On motion of Dr. H. A. Black, which was duly seconded, the Secretary was instructed to send fraternal greetings to the Association.

Dr. H. A. Black, Chairman, presented the report of the Nominating Committee, as follows:

President, George B. Packard, Denver, and A. J. Markley, Denver; First Vice President, Ella Mead, Greeley; Second Vice President, V. A. Hutton, Florence; Third Vice President, M. R. Fox, Sterling; Fourth Vice President, L. C. Bolton, Cedar Ridge; Secretary, Crum Epler, Pueblo; Treasurer, W. A. Sedwick, Denver; Delegate to the American Medical Association, H. R. McGraw, Denver; Alternate Delegate, F. R. Spencer, Boulder; Councillor of District No. 1, J. A. Matlock, Boulder; Councillor of District No. 5, Edgar Hadley, Telluride; Member of the Committee on Publication, L. B. Lockard, Denver; place of meeting, Denver; Chairman of Committee on Public Policy and Legislation, W. H. Sharpley, with a suggestion that the House of Delegates request the incoming President to appoint Dr. O. M. Gilbert Secretary of this Committee.

On motion of Dr. Jones, which was duly seconded, the report of the Committee was received and the committee discharged.

Dr. Wetherill offered the following resolution in regard to Dr. Hubert Work:

Resolved, That the Colorado State Medical Society in convention assembled cordially endorses the choice at the primaries of Hubert Work of Pueblo for the office of United States Senator.

Though the selection falls upon one who has been a member of the medical profession of Colorado for twenty-nine years, it is not for this reason that we commend him, but because through our intimate association with him as a man we believe that he possesses the essential qualifications which fit him for this high office as a servant of the people of Colorado.

We know him as an organizer and builder and we look forward to his election with confidence and the belief that he will bring to this office the full force of his business ability and tact.

That he is free from bigotry and that he is not a professional politician are his strongest recommendations.

Resolved, That we heartily endorse him, and that we recommend our friends who are interested in the welfare and well-being of Colo-

rado and its people as a whole to do all that may be possible to promote the selection of this candidate for this office at the coming election.

It was moved that the resolution be adopted. Seconded and unanimously carried.

Dr. T. E. Carmody presented the following report:

REPORT OF REFERENCE COMMITTEE ON REPORTS OF COMMITTEES.

Public Policy and Legislation.

We wish to thank the Committee on Public Policy and Legislation for their report, although they had no opportunity to distinguish themselves. Their work, which does not show results, is nevertheless appreciated.

Publication.

The very full report of the Committee on Publication gives us a very good idea of the amount of work accomplished by this Committee. We would respectfully recommend that the constituent societies do everything in their power to make Colorado Medicine interesting and profitable to the members.

Necrology.

The very complete report of the Committee on Necrology is especially commended and could very well serve later committees as a sample of what such report should be.

Health and Public Instruction.

We wish to thank Dr. Corwin and his committee for their very full and illuminating report, especially that part dealing with the country schools, and would recommend that a State Law be enacted giving our State Board of Health power to burn all text and library books found in an unsanitary condition, and that this law further provide that all schools furnishing free text books should have the same fumigated at least once during the year. To this end we would recommend that this report be turned over to the Committee on Public Policy and Legislation.

Awarding Prize of \$100 for Original Research.

On account of the great amount of work entailed and on account of the dissatisfaction and dissension caused by adverse reports in a small Society like ours, and due to no fault of this Committee, we respectfully recommend the discontinuance of this prize offer.

Committee to Cooperate With the State Pharmaceutical Association.

We respectfully recommend that a copy of this report be furnished to the Committee on Public Policy and Legislation with the recommendation that they draft or have drafted, a proposed bill for introduction in the State Legislature.

J. C. CHIPMAN,
H. L. WILLIAMS,
T. E. CARMODY.

Dr. A. T. King moved the adoption of the report.

Seconded and carried.

Secretary Black read the report of the Auditing Committee as follows:

Report of Auditing Committee.

Boulder, Colorado.

September 10, 1914.

To the President and Members of the Colorado State Medical Society.

The committee appointed to audit the books of the Secretary and Treasurer, begs leave to submit the following report:

Receipts for the year:

Balance on hand October 7, 1913	....\$2,384.47
Shown by the reports of the Secretaries of the Constituent County Societies	..... 2,424.00
Report of the Committee on Colorado Medicine	..... 513.56
Interest on deposits 74.47

Total\$5,397.50

Expenditures as shown by receipted bills 2,766.76
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Amount on hand as shown by International Trust Company and cash 2,630.74

The Committee wishes to commend the Secretary and Treasurer for the excellent condition of their books.

W. A. JOLLEY,
H. C. DODGE,
H. A. CALKINS.

It was moved that the report of the Auditing Committee be adopted.

Second and carried.

Dr. Wetherill moved the appointment of a committee of three to promote the candidacy of Dr. Hubert Work.

Motion seconded and carried.

President Gilbert appointed on this Committee Drs. Wetherill, Epler and Hughes.

On motion of Dr. Chipman, the House of Delegates adjourned until Friday, 8 a. m.

Fifth Meeting of the House of Delegates, September 11, 1914

The House of Delegates met at 8:20 a. m., and was called to order by the President.

The Secretary called the roll and announced a quorum present.

The minutes of the previous meeting were read and approved.

The first order of business being the election of officers, President Gilbert ruled that additional nominations might be made by delegates from the floor. He felt it was his duty so to rule, and he recommended that this action be made more specific, and that Section 1, Chapter VII., of the By-laws be more specific and relieved of its ambiguity. This Section read:

"On the first meeting of each annual session the House of Delegates shall select a Committee on Nominations consisting of five delegates, no two of whom shall be from the same constituent society. This Committee shall prepare a ticket nominating two members of the society for the office of President and at least one for each of the other offices to be filled, delegates to the

American Medical Association, member of the Publication Committee, and a time and place of meeting for the following year, and report the same to the House not later than the second day of each annual meeting. Additional nominations may be made by delegates from the floor."

Dr. Wetherill said that in the interest of democratic government and harmony in the Society, it was important that the construction of this by-law should be liberal, and he would personally favor very much an interpretation of the same in accordance with the ruling of the President. It meant that whatever was done in the House of Delegates and in the Society must not be done by gag law or force. It must be done with the reasonable cooperation of everybody and done on a liberal basis.

He therefore moved that it be the sense of the House of Delegates that nominations might be made from the floor at the time of election. Seconded and carried.

Secretary Black read the list of nominations as recommended by the Nominating Committee.

The name of A. J. Markley for President was withdrawn at his own request.

The following officers were balloted for and declared duly elected:

President, George B. Packard, Denver; First Vice President, Ella Mead, Greeley; Second Vice President, V. A. Hutton, Florence; Third Vice President, M. R. Fox, Sterling; Fourth Vice President, L. C. Bolton, Cedar Ridge; Secretary, Crum Epler, Pueblo; Treasurer, W. A. Sedwick, Denver; Delegate to American Medical Association, H. R. McGraw, Denver; Alternate Delegate, F. R. Spencer, Boulder; Councillor, District No. 1, J. A. Matlock, Boulder; Councillor, District No. 5, Edgar Hadley, Telluride; Member Publication Committee, L. B. Lockard, Denver; Chairman of the Committee on Public Policy and Legislation, Dr. W. H. Sharpley, Denver.

The Secretary read the resignation of Dr. George A. Moleen as Member of the Publication Committee, as follows:

"I hereby tender you my resignation as a member of the Publication Committee of Colorado Medicine and trust that the same will meet with the approval of your honorable body.

GEORGE A. MOLEEN."

It was moved that the resignation be accepted. Seconded and carried.

Secretary Black nominated Dr. Philip Hillkowitz to fill the unexpired term of Dr. Moleen. Seconded by Dr. Carmody.

Dr. Hillkowitz desired to have his name withdrawn.

It was moved and seconded that Dr. Melville Black be nominated to fill the unexpired term of Dr. Moleen. Carried.

Dr. Bortree moved that nominations be closed and the President cast the ballot for Dr. Black, which he did, and Dr. Black was declared duly elected.

Denver being nominated as the next place of meeting, it was moved that nominations be closed and the secretary be instructed to cast

the ballot of the House of Delegates for that city. Seconded and carried.

The Secretary cast the ballot as instructed, and Denver was declared to be the next place of meeting.

Dr. Chipman moved that the House of Delegates designate the time of meeting as the first Tuesday in October, 1915. Seconded by Dr. Bortree and carried.

The Secretary read the following report of the Committee on Appropriations.

REPORT OF THE COMMITTEE ON APPROPRIATIONS.

Colorado Medicine, \$2 per capita.

Editor, Colorado Medicine	\$ 300
Secretary	200
Programs	60
Committee on Public Policy and Legisla- tion	200
Emergency and Incidentals	50
Expenses of Hideyo Noguchi	125
Stenographers	225
Purchase of Books	200
Total	\$1,360

E. A. ELDER,
ALFRED FREUDENTHAL,
S. FOSDICK JONES.

It was moved by Dr. Bortree and seconded by Dr. Mayhew, that the report be accepted and the Committee discharged. Carried.

Dr. H. A. Black asked when the report of the Board of Councillors would be made.

The President replied that he did not know, but it ought to be made at this time.

Dr. Wetherill, a member of the Board of Councillors, stated that a meeting of the Councillors had been called, but as there was not a quorum present no business could be transacted.

Dr. A. T. King moved that the report of the Board of Councillors as presented by Dr. Wetherill be accepted. Motion seconded and carried.

Dr. Wetherill: I would like to move that the House of Delegates extend a vote of thanks to the citizens of the City of Boulder, to the Boulder Medical Society, to the wives of physicians of the City and County of Boulder, and to the University authorities for the uniform courtesy and hospitable entertainment which the members of the Colorado State Medical Society have enjoyed at this meeting. Seconded by Dr. Bortree and carried.

President Gilbert: I take this occasion, gentlemen, to thank you on behalf of the City and County of Boulder for the splendid turnout you have given us. Certainly, we have been accorded the greatest charity in every respect. The attendance in some respects has been a little beyond expectation, we are glad to say, and while the capacity of the hall seemingly has been overtaxed at times, everybody has been good-natured and charitable about it. (Applause.)

If there is no further business to come be-

fore the House of Delegates, the Chair will entertain a motion to adjourn.

It was moved that the House of Delegates adjourn *sine die*.

Motion seconded and carried.

MISCELLANEOUS PROCEEDINGS OF THE FORTY-FOURTH ANNUAL MEETING OF THE COLORADO STATE MEDICAL SOCIETY, HELD AT BOULDER, COLORADO, SEPTEMBER 9, 10 AND 11, 1914.

At the morning session on Wednesday, September 9, 1914, Dr. Carbon Gillaspie, of Boulder, delivered a short address of welcome, before the commencement of the scientific program.

In the afternoon, after addresses by the president and by Drs. Hideyo Noguchi and Louis B. Wilson, these two visitors were made honorary members of the Society.

After the morning session on Thursday, September 10, 1914, the members visited the laboratories of the University of Colorado and attended a complimentary luncheon given by the President and Regents of the University, at the Macky Auditorium.

After the luncheon, following some remarks by Dr. W. P. Harlow, Dean of the Medical School of the University of Colorado, Dr. Livingston Farrand made the short address printed near the beginning of this issue.

In the afternoon of September 11, the new President, Dr. G. B. Packard, and Secretary, Dr. Crum Epler, were installed.

Dr. Melville Black, the retiring Secretary, was presented with a silver after-dinner coffee set, and Dr. George Miel, the retiring Treasurer, received a gold watch and fob.

The Society adjourned to meet in Denver the first week in October, 1915.

NEWS NOTES.

(Continued from page 380.)

Dr. E. Eckerson has been quite ill since September 25th.

Dr. H. R. McGraw attended the recent meeting of the New Mexico State Medical Association as fraternal delegate from Colorado. He read a paper on "Some Interesting Cases of Erroneous Surgical Diagnoses."

Dr. J. F. Kearns spent the month of September visiting his old home in Canada and pursuing a post-graduate course at his Alma Mater, McGill University.

Dr. C. M. Spicer, Lamar, has returned from a three months' post-graduate course in Chicago.

Dr. D. L. Fitzgerald, Hartman, has moved to Nebraska and will probably locate in Omaha.

Dr. R. G. Hersom, Cheraw, spent several weeks during September visiting his old home in Maine.

Dr. Newkirk, Swink, is a candidate for Coroner on the Republican ticket.

The Garfield County Medical Society was reorganized October 1, 1914, with a paid-up membership of ten. The new officers are: President, Dr. E. F. J. Smits; Vice President,

Dr. W. R. Tubbs; Secretary-Treasurer, Dr. W. W. Frank; Delegate, Dr. W. W. Cook; Alternate Delegate, Dr. L. G. Clark; Board of Censors, Drs. L. G. Clark, W. W. Frank and W. G. Lockard.

Pueblo Notes.

The following physicians are in the thick of the political campaign: Dr. Hubert Work, Republican nominee for United States Senate; Dr. F. E. Wallace, Republican nominee for State Legislature; Dr. Ray Taylor, who has recently completed his hospital internship in Denver, Republican nominee for Coroner; W. O. Patterson, Democratic nominee for Coroner. Mrs. Lillie Baker, wife of Dr. W. H. Baker, is Republican nominee for County Superintendent of Schools.

Dr. Natban H. Alcock, who has been associated with the firm of Drs. Stoddard, Heller & Alcock, will leave soon for Iowa City, Ia., where he has accepted the chair of Genito-Urinary Professor in the Iowa Medical College.

On October 6th, Dr. J. J. Pattee presented a paper before the New Mexico State Medical Society at Albuquerque.

Book Reviews

A Text-Book of Medical Diagnosis. By James M. Anders, M.D., Professor of the Theory and Practice of Medicine and of Clinical Medicine, Medico-Chirurgical College of Philadelphia; and L. Napoleon Boston, M.D., Professor of Physical Diagnosis, Medico-Chirurgical College, Philadelphia. Second edition thoroughly revised. Octavo of 1,248 pages, 500 illustrations, some in colors. Philadelphia and London: W. B. Saunders Company, 1914. Cloth, \$6 net; half morocco, \$7.50 net.

This very complete work on medical diagnosis is well worth the attention of any practitioner, regardless of what particular branch of medicine he may be interested in. Although the work is thorough, there is no waste of space or time. Each subject is attacked squarely and concisely, giving one the impression that the major portion of the text is written from personal experience rather than from perusal of literature.

The tables in differential diagnosis and the illustrations are above criticism.

The arrangement of the work enables one quickly to obtain the knowledge sought for and gives one the assurance that the knowledge gained is based upon thorough research and large experience. A. S. T.

International Clinics, a Quarterly of Illustrated Clinical Lectures and Especially Prepared Original Articles on Treatment, Medicine, Surgery, etc., by leading members of the medical profession. Edited by Henry W. Cattell, A.M., M.D., Philadelphia, U. S. A. Vol. III, Twenty-fourth Series, 1914. Philadelphia and London. J. B. Lippincott Company.

This new volume includes articles on the

vaccine treatment of typhoid fever, on hypodermoclysis in the treatment of acute infections, on the nature and successful treatment of rheumatoid arthritis, on the use of vaccines in an epidemic of pertussis, and on Deaver's surgical clinic at the German Hospital in Philadelphia, as well as on many other topics of lively interest.

MEDICAL SOCIETY OF THE CITY AND COUNTY OF DENVER.

Library, 266 Metropolitan Building, Denver.

(NOTE.—In the following Rules the attention of State Society members not resident in Denver is especially called to the last six lines of the section "Privileges.")

RULES.

Hours.

The Library rooms shall be open from 9:30 a. m. to 2 p. m., and from 3 p. m. to 6 p. m., Sundays excepted.

Admission.

All members of the Medical Society of the City and County of Denver and of the Colorado State Medical Society shall have access to the Library during library hours.

Medical students of the University of Colorado are privileged to use the Library at the Library rooms.

A member of the Medical Society of the City and County of Denver may extend to a non-member the use of the Library at the Library rooms for a period of thirty days by a written or personal introduction. The name of the guest shall be entered in a book kept for that purpose, and the member shall be held responsible for his guest.

Privileges.

Only members of the above-named Societies shall have the privilege of borrowing books and periodicals, and of taking them from the Library rooms.

Books may be borrowed for a period of two weeks, bound volumes of journals for one week. Renewal for one week will be allowed if no request for the volume has been made by another person in the meantime. Current periodicals may be borrowed at the close of library hours, but in every case must be returned at the opening hour the following morning. Unbound periodicals on file, which have been properly removed from the current shelves, may be borrowed for two days. Members of the Colorado State Medical Society may have books and periodicals sent to them by mail or express, for a period to be specified in each instance (the time usually allotted plus the time required for transportation), by paying the expense entailed in advance.

Restrictions.

No book or periodical may be taken from the Library rooms by anyone without giving the attendant the required receipt.

No more than two books or three journals

may be borrowed by the same person at the same time.

No books of reference, so designated by the Board of Trustees, as dictionaries, encyclopedias, atlases, etc., shall be taken from the Library rooms.

No book acquired by the Library shall be loaned or taken from the Library rooms during the first fifteen days it is on the shelf, except from 6 p. m. until the opening of the Library the following morning.

After fifteen days and until the book is sixty days old it may be borrowed for a period of three days without the privilege of renewal.

Fines.

A fine of 3 cents per day shall be collected for each day a book or periodical is kept after its return is due.

If any book or periodical be not returned in a satisfactory condition, and within sixty days, the borrower shall be required to replace it or pay the full cash value of the volume or number, or of the set to which it belongs, as may be determined by the Board of Trustees.

General.

Silence in the Library rooms must be observed. No smoking shall be allowed. The marking or mutilation of the property of the Library in any manner is strictly forbidden.

All visitors are requested to give their names to the attendant. Suggestions will be welcomed and should be made in writing.

No exceptions to these rules may be made without the express written permission of the librarian or member of the Board of Trustees.

Any person violating the rules of the Library or misbehaving shall be subject to the curtailment of all privileges, as the Board of Trustees may determine.

SOME RECENT ADDITIONS TO THE LIBRARY—MODERN BOOKS.

Therapeutics of Internal Diseases; F. Forchheimer. 2nd edition, 5 vols. and index. 1914.

Principles of Pathologic Diagnosis; F. B. Mallory. 1914.

Surgery of the Stomach; H. J. Patterson. 1913.

Deformities and Diseases of the Bones and Joints; A. H. Tubby. 2 vols. 1912.

Anatomy and Physiology for Nurses; Leroy Lewis. 3rd edition. 1913.

Ophthalmoscopic Diagnosis; C. Adam. 1913.

Medical Jurisprudence; Witthaus and Becker. Vols. 3 and 4. 1909-1911.

Human Physiology; Luigi Lunciani. 2 vols. 1911-1913.

Handbuch d. biochemischen Arbeitsmethoden; Emil Abderhalden. 7 vols. 1910-1913.

Lungenchirurgie; O. Vulpus and H. Quincke. 2nd edition. 1912.

Handbuch der Anatomie und Mechanik der Gelenke; Rudolph Fick. 3 vols. 1904-1911.

Grundriss der chirurgisch-topographischen Anatomie; Otto Hildebrand. 1913.

Physiologisch-biologische Richtung der modernen Chirurgie; E. Payr. 1913.

Innere Secretion; Arthur Biedl. 2nd edition. 1913.

Lehrbuch der Intoxicationen; Rudolph Kobert. 2 vols. 1902-1905.

Neue deutsche Chirurgie; P. v. Bruns. 9 vols. 1912-1913.

Nagelextension der Knochenbrüche; F. Steinmann.

Chirurgie der Samenblasen; F. Voelcker. Chirurgie der Thymusdrüse; Heinrich Klose.

Verletzungen der Leber und der Gallenwege; F. Thöle.

Chirurgie der Nierentuberculose; H. Wilbolz.

Chirurgie, der Lebergeschwülste; F. Thöle.

Chirurgie der Nebenschilddrüsen; N. Guleke.

Röntgendiagnostik der Herz-und Gefässerkrankungen; F. M. Groedel.

Krankheiten des Knochensystems im Kindesalter; Paul Frangenheim.

Praxis der lokalen Anaesthesie; Arthur Schlesinger. 1910.

Imperial Cancer Research Fund; Fifth Scientific Report. 1912.

Pathogenesis of Salvarsan Fatalities; Wilhelm Wechselmann. 1913.

Surgical After-treatment; Crandon and Elvenfried. 1912.

Diseases of the Skin; H. W. Stelwagon. 7th edition. 1914.

Reichs-Medizinal-Kalender für Deutschland. 1914.

Medical Who's Who; London. 1914.

Medical Register; London. 1914.

Some American Medical Botanists; Howard A. Kelly. 1914.

Modern Medicine; Osler and McCrae. 3 vols., 2nd edition. 1914.

Respiratory Function of the Blood; Joseph Barcroft. 1914.

Progressive Medicine; H. A. Hare. Vol. 2. 1914.

Infant Feeding; Clifford Grulee. 2nd edition. 1914.

International Clinics; H. W. Cattell. Vol. 2. 1914.

Selected Papers; Carlos J. Findley. 1912.

Studies From Saranac Laboratory; E. L. Trudeau. 1904-1910.

Medical and Surgical Reports from the Episcopal Hospital, Philadelphia. 1914.

Handbuch der Biochemie; Carl Oppenheim. 4 vols. and supplement. 1909-1913.

Collected Papers from the Research Laboratory of Parke, Davis & Co.

American Cyclopaedia of Ophthalmology; Casey A. Wood. 4 vols. 1914.

Practice of Surgery; J. G. Mumford. 2nd edition. 1914.

Surgical and Medical History of the Naval War Between Japan and Russia. Japanese Naval Medical Bureau. 1911.

Anoci-association; Crile and Lower. 1914.

Treatise on Clinical Medicine; W. H. Thomson. 1914.

Mother's Guide in the Care of Infants; H. T. Safford. 1914.

Text-book of Pathology; Adami and McCrae. 1914.

BOOKS BELONGING TO THE COLORADO STATE MEDICAL SOCIETY.

(In the Care of the Library of the Medical Society of the City and County of Denver.)

Abortion, prevention and treatment of; F. J. Taussig. 1910.

Alimentation, Physiology of; M. H. Fischer. 1907.

Anatomy, Human; G. A. Piersol.

Anatomy, Laboratory Manual of Human; L. F. Barker. 1904.

Anatomy, Practical; J. C. Heisler. 1912.

Annual of Universal Medical Sciences; C. E. Sajous. 1889, 1890, 1892, 1893, 1894, 1895, 1896.

Anoci-Association; G. W. Crile and W. E. Lower. 1914.

Appendicitis and diseases of the vermiform appendix; H. A. Kelly. 1909.

Arteries of the gastro-intestinal tract; Byron Robinson. 1908.

Baby, the care of the; J. P. C. Griffiths. 5th ed. 1911.

Bacterial food poisoning; A. Dieudonné. 1909.

Bacteriological technique, elements of; J. W. H. Eyre. 2d ed. 1913.

Bacteriology, Text Book of General; E. O. Jordan. 1910.

Bacteriology, Veterinary; R. C. Buchanan. 1911.

Bernays, Augustus C., a Memoir of; Thekla Bernays. 1912.

Biographic clinics; G. M. Gould. 1909.

Biography, Cyclopaedia of American Medical; H. A. Kelly. 2 vols. 1912.

Bladder, Disorders of; Follen Cabot. 1909.

Blood Pressure; L. Bishop. 1904.

Blues, Their Cause and Cure; Albert Abrams. 1904.

Botanists, Some American Medical; H. A. Kelly. 1914.

Bright's Disease, Anatomy and Histology of; Horst Oertel. 1910.

Bright's Disease, Surgical Treatment; G. M. Edebohls. 1904.

Cardiac Pathology; G. W. Trovis. 1911.

Cardio-Vascular Diseases; T. E. Tatterthwaite. 1913.

Catalogue of Officers and Fellows, Jan. 1, 1908, Mass. Med. Society. 1908.

Chemistry, Laboratory Manual of Physiological; R. W. Rockwood. 1906.

Chemistry, Physical; W. Pauli. 1907.

Chemistry, Text Book on Physiological; C. E. Timon. 2d ed., 1904. 3d ed., 1907.

Children, Diseases of; Abraham Jacobi. 1910.

Clinical Medicine, Treatise on; W. H. Thomson. 1914.

Clinical Treatise on Pathology and Therapy; Van Noorden. 1905.

Colorado Medicine. 1903 to date.

Colorado State Board of Health. Report, 1900, 1902.

Consumption, Self Cure of; C. H. T. Davis. 1904.

- Consumption, Pulmonary; C. B. J. Williams. 1872.
- Cystoscopy, Practical; P. M. Pilcher. 1911.
- Dermatology, Principles and Practice of; W. A. Pusey. 1907.
- Diagnosis, Clinical; J. C. Todd. 1st ed., 1908. 2d ed., 1911.
- Diagnosis, Differential; R. C. Cabot. 1911.
- Diagnosis, Manual of Clinical; C. E. Timon. 1907.
- Diagnosis, Medical; C. S. Greene. 1910.
- Diagnosis, Physical; H. S. Anders. 1907.
- Diagnosis, Practical; H. A. Hare. 1907.
- Diagnosis, Principles and Practice of Physical; J. C. Da Costa. 2d ed., 1911.
- Diagnosis, Text Book of Medical; James Anders and L. N. Boston. 1911.
- Diagnosis, Urine and Feces in; Otto Hensel. 1905.
- Diagnostic and Therapeutic Technic; A. S. Morrow. 1911.
- Diagnostic Methods; R. W. Webster. 1909-1912.
- Diagnostic Methods, Trüller's; tr. by R. C. Whitman. 1913.
- Diagnostic Methods, Treatise on; Sahli-Potter. 2d ed., 1911.
- Diagnostic Symptoms in New Diseases; E. L. Hunt. 1914.
- Dictionary, American Illustrated Medical; W. A. N. Dorland. 7th ed., 1913.
- Dictionary of Medical Science; Robley Dunglison. 1866.
- Dietetics, Practical; Gilman Thompson. 1909.
- Digestion and Metabolism; A. E. Taylor. 1912.
- Digestive System, Diseases of the; Frank Billings. 1906.
- Dislocations and Joint Fractures; F. J. Cotton. 1910.
- Duodenal Ulcer; B. G. A. Moynihan. 1st ed., 1910. 2d ed., 1912.
- Dyspepsia, Its Varieties and Treatment; W. S. Fenwick. 1910.
- Ear, Diseases of the; P. D. Kerrison. 1913.
- Ear, Examination of the; T. Spencer.
- Ear, Text Book of the Diseases of; Mac Yearsley. 1908.
- Ear and Its Diseases; S. S. Bishop.
- Ear, Nose and Throat, Text Book of Diseases of the; F. R. Packard. 2d ed., 1913.
- Electro-therapeutics, Practical; T. B. Gottschalk. 1904.
- Embryology, Human. W. R. Manton. 1906.
- Epoch-Making Contributions in Medicine; C. N. B. Carnac. 1909.
- Eye, Common Diseases of the; Wood and Woodruff. 1904.
- Eye, Diseases of the; G. E. de Schweinitz. 7th ed., 1913.
- Eye, Manual of the Diseases of the; H. May. 1st ed., 1907; 7th ed., 1911.
- Eye and Ear, Diseases of the; Arthur Alling. 1905.
- Eye and Ear, Manual of Anatomy and Diseases of; D. B. Roosa and A. E. Davis. 1904.
- Eye, Ear, Nose and Throat, Practical Medicine Series; Wood and Andrews. 1910.
- Eye, Ear, Nose and Throat, Practical Medicine Series; Wood, A. Vol. 3, 1909.
- Eye, Ear, Nose and Throat Nursing; E. A. Douglas. 1905.
- Extrauterine Gestation; D. B. Hart. 1887.
- Featural Imperfections, Correction of; C. C. Miller. 1908.
- Fenger, Collected Works of Christian; L. Hektoen. 2 vols. 1912.
- Fluids of the Body; E. H. Starling. 1909.
- Formulary, Pocket; E. Q. Thornton. 1909.
- Genito-Urinary Diseases; Edgar Ballenger. 1908.
- Genito-Urinary Diseases; F. S. Watson and J. H. Cunningham. 2 vols. 1908.
- Genito-Urinary Diseases, Compend of; C. S. Hirsch. 1906.
- Genito-Urinary Diseases, Essentials of; T. T. Wilcox. 1909.
- Genito-Urinary Diseases, Practical Treatise on; R. W. Taylor. 1904.
- Genito-Urinary Diseases and Syphilis; H. H. Morton. 1906.
- Genito-Urinary Organs, Surgery of; J. W. P. Gouley.
- Glycosuria and Diabetes, Studies Concerning; F. M. Allen. 1913.
- Gonorrhoea, Its Diagnosis and Treatment; Frederick Baumann. 1908.
- Gonorrhoea in the Male; A. L. Wolbarst. 1911.
- Gonorrhoea in Women; C. G. Norris. 1913.
- Gynecology, Practical Medicine Series; E. C. Dudley. 1909.
- Gynecology, Practical Medicine Series; E. C. Dudley and Bachellé. 1910.
- Gynecology, Compend of; W. H. Wells. 4th ed., 1911.
- Gynecology, Compend of Operative; W. T. Bainbridge. 1906.
- Gynecology, Conservative; G. M. Massey. Ed., 1905; ed., 1906.
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HYPERTHYROIDISM.

Bing protests against the use of the name exophthalmic goiter, saying that the goiter and the exophthalmos are the least essentially characteristic symptoms. The cardiovascular anomalies and the tremor are the obligatory diagnostic criteria and not the protruding eyes or the goiter. The syndrome may be typical even without the latter. The tachycardia is permanent, the heart beat is regular as a rule. The tremor is rapid, eight or ten times a second, and increasing in intensity during movements and subsiding in complete repose. Other secondary symptoms are transient weakness of muscles, generally those of the legs, amounting at times to paroxysmal paraparesis, so that the patient sinks down as he is standing or walking. This muscular weakness fluctuates and it may occasionally be experienced elsewhere than in the legs, in the back of the neck or external ocular muscles, while the accommodation musculature and the iris are spared. Some of his patients were unable to draw a deep breath; the French call this the "signe de Louise Bryson." Other secondary symptoms are menstrual disturbances, especially dysmenorrhea and less frequently amenorrhea. Diarrhea is also characteristic; it comes on suddenly and may persist for days or weeks, rebellious to all treatment, and then stop suddenly as it began. The passages are very thin; there is seldom pain with them and they may run up to ten or more a day. General or localized hyperhidrosis is also common, continuous or paroxysmal. This dampness of the skin is probably responsible for its changed conductivity. If in health the conductivity corresponds to 4,000 ohms, in the thyroid patient it drops to 1,000 ohms. Neuralgic disturbances and signs of excessive excitability of the neuromuscular apparatus are more common. A slight tap on the muscles starts them to twitching. Trophic disturbances are likewise common in exophthalmic goiter, especially dryness and brittleness of the hair and a lack of luster; this was noted in sixty per cent. of Bing's patients. Pigmentation, edema, softening of the bones and atrophy of the breasts are also common. In his study, published in the Schweizerische Rundschau für Medizin, 1913, xiii, 409, he reviews the anomalies in the metabolism, the lymphocytosis, and then comments on the extreme restlessness of the patients, their constant activity and the lack of perseverance in their efforts. It is hard for them to stay long in one place, they are subject to frequent change of moods, and they take offense readily. In two-thirds of all his cases, symptoms on the part of the heart were the first to attract attention, before a goiter or tremor was noticed. The course is generally subchronic or intermittent chronic, but Trousseau and Müller have reported a rapidly fatal course with death in two months in a few cases and Mackenzie a

death the third day after the first symptoms. A hereditary and familial connection with psychoses or psychoneuroses can be traced in most cases, and preceding or co-existing mental disease is not very rare. The hyperthyroid syndrome sometimes develops as a complication of organic disease of the nervous system or following a fright or emotional stress. In treatment Bing advises a few weeks in bed to reduce the restlessness and tachycardia, avoidance of meat and much seasoning and also of tea, coffee, alcohol and tobacco, restricting the diet to eggs, milk and vegetables. If milk increases the diarrhea, he orders it in the form of a jelly (10 gm. of pulverized gum arabic are stirred into a little cold milk and then 0.25 liter of whole milk is poured over it and the whole boiled, with or without a little peeled and ground sweet and bitter almonds). Resting in a steamer chair, out of doors, especially at a moderate altitude, from 3,600 to 5,400 feet, is useful, but sports and dancing must be forbidden. Of drugs, sodium phosphate in daily doses of 6, 8 or 10 gm., dissolved in water, milk or soup, seems to have almost a specific action. Bing says, on most of the hyperthyroid symptoms. If it induces diarrhea, he gives calcium glycerophosphate instead (0.25 gm. four times a day). Valerian preparations do little good unless they are given continuously and in large doses, almost to actual saturation of the system with valerian. Belladonna and atropin have occasionally had a favorable action, as also arsenic. Organotherapy has not obtained a permanent place yet in treatment of hyperthyroidism, although theoretically it is well founded; in its very nature, however, its action is but temporary. He says that operative treatment also is liable to have but transient success, requiring further resections. The mortality also is about 5 per cent., on account of the unstable condition of the heart and vasomotor. Bircher advises against operations in exophthalmic goiter, but Bing advocates them when the social or financial condition renders impossible medical supervision over months and years.

ANTIFAT "CURES."

In order to be able to give a definite reply to fat people who made inquiries concerning various remedies advertised in the newspapers and through the mails, the Department of Agriculture of the United States government has recently conducted a series of tests with antifat nostrums on employes of the department who wished to lose surplus flesh without injuring their health. One widely advertised prescription was tried for six months. Two of the subjects were obliged to stop after two or three weeks because of the injurious effects on the system. The third subject gained 2½ pounds instead of losing flesh. A patient who tried another remedy lost 18 pounds in six months, but during this time he had eaten no bread, butter, starchy food, pastry, sugar, or candy; and within three months after discontinuing the treatment he was back to his original weight.

We have heard too much about the rights of the individual; let us know more about his duties. Too much stress has been laid on the sacredness of private property, and too little on the duty of all to contribute to the welfare of the whole. Preventive medicine has demonstrated in a practical way the force of the biblical statements that no man liveth to himself alone, and that every man is his brother's keeper. Preventive medicine is the most potent factor in the socialistic movement of the day with which every good man feels himself more or less in sympathy; besides it is at the same time a most powerful weapon against the anarchy with which some would threaten us.—Victor C. Vaughan, President, A. M. A.

If preventive medicine is to bestow on man its richest service, the time must come when every citizen will submit himself to a thorough medical examination once a year or oftener. The benefits which would result from such a service are so evident to medical men that detail is not desirable. When recognized in their early stages, most of the diseases which now prevail are amenable to treatment. The early recognition of tuberculosis, cancer, diabetes, nephritis, heart disease, etc., with the elimination of the more acute infectious diseases, would add something like fifteen years to the average life, besides saving much invalidism and suffering. The ultimate goal of science is the domination of the forces of nature, and their utilization in promoting the welfare of mankind. Science must discover the fact, and medicine must make the application for either cure or prevention.—Victor C. Vaughan, President, A. M. A.

Danger From Wood Alcohol.—A number of states have prohibited the use of wood alcohol for foods, drinks and medicinal preparations, and some forbid its use even in preparations for external application. Methyl, or wood alcohol, is the cause of severe toxic symptoms, one of the most serious of which is more or less complete blindness. The department of health of the city of New York recently analyzed 233 toilet preparations, including bay rum, face lotions, hair lotions, toilet waters and witch hazel, and found as many as ninety to contain wood alcohol. Yet the fact was in no instance stated on the manufacturer's label. The use of this substance should not be permitted in any preparation intended for human beings.

A TYPHOID EPIDEMIC.

A report (Public Health Bulletin No. 65) concerning an outbreak of typhoid fever caused by an infected water supply from a deep well in Rockville, Md., is worth study and consideration, because similar methods of water supply are in use in many of our smaller cities. In the case of Rockville, the excreta from a typhoid patient were the means of spreading the disease, other factors being carelessness at the bedside of the first patient, lack of sanitary privies or properly connected water clos-

ets in the town, lack of systematic bacteriological examination of the water prior to the outbreak, and the interference with proper drainage produced by high water in the streams, which allowed seepage and overflow into the main well supply, although the well was supposedly seepage-tight.

The source of contamination was traced by L. L. Lumsden, surgeon of the U. S. Public Health Service, the methods of study including: First, a general survey of the town and its environs; second, epidemiological study of the cases of typhoid fever; third, a bacteriological examination of the public water supply; and, fourth, a special sanitary survey of the area around the public wells from which underground drainage was considered likely to reach the town water supply.

Following this investigation, the epidemic was rapidly stamped out by chemical treatment of the water and the use of general prophylactic measures.

THE TRAVEL STUDY CLUB TOUR FOR 1915.

The Travel Study Club of American Physicians, which made a successful study tour of Europe last year, has completed the plans for its 1915 study tour to the A. M. A. meeting in San Francisco, and to Honolulu, Japan, the Philippines and China, with optional return via Siberia and Europe, or via Canada. This being the first party of American physicians ever visiting the Far East and the new possessions of the United States, a most cordial welcome by authorities and members of the medical profession can be expected. The Travel Study Club would like to make its enterprise as representative as possible and asks all those interested to communicate with the secretary, Dr. Richard Kovacs, 236 East 69th street, New York.

In a recent number of the *Journal of the Association of Collegiate Alumnae* is an article on the "Vocation of Dietitian," by Alice Friend Mitchell, from which the following quotation is taken:

There appears to be three distinct fields for work along the line of dietetics: in connection with philanthropic societies; in connection with institutions, and in connection with business enterprises.

The work in connection with philanthropic societies is comparatively new, but is finding much favor as a practical means for social service. The worker is called by various names in different localities: visiting dietitian, domestic educator, visiting housekeeper, domestic science visitor, domestic rehabilitator, or visiting home economist. The titles in themselves indicate the nature of the work. The visiting dietitian goes into the homes of the poor, enlists the interest of the housewife, instructs her in matters of cleanliness, cooking and sewing, shows her how to buy economically and helps her arrange well balanced menus. In cases of sickness in the family she assists and instructs how to prepare suitable kinds of food for the patient. When a family has once been "put on its feet," she goes on

to another case, but continues to visit the first family, perhaps once a week, to watch progress. Often the dietitian forms cooking classes for groups of mothers to meet once a week and often she may give talks on household problems to groups of mothers at some school building or church.

The Air We Breathe.—Dr. Thomas Hubbard (Toledo) says that during the period 1825 to 1875 the standard of temperature of dwellings and public places was gradually increased from 55 degrees to 72 degrees F. There was no attempt at corresponding increase of humidity. Dry air is dust-laden and an infection disseminator. Moist air causes precipitation of dust content, and proper humidity lessens the danger of air-borne infection.

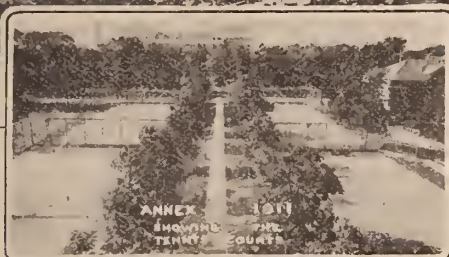
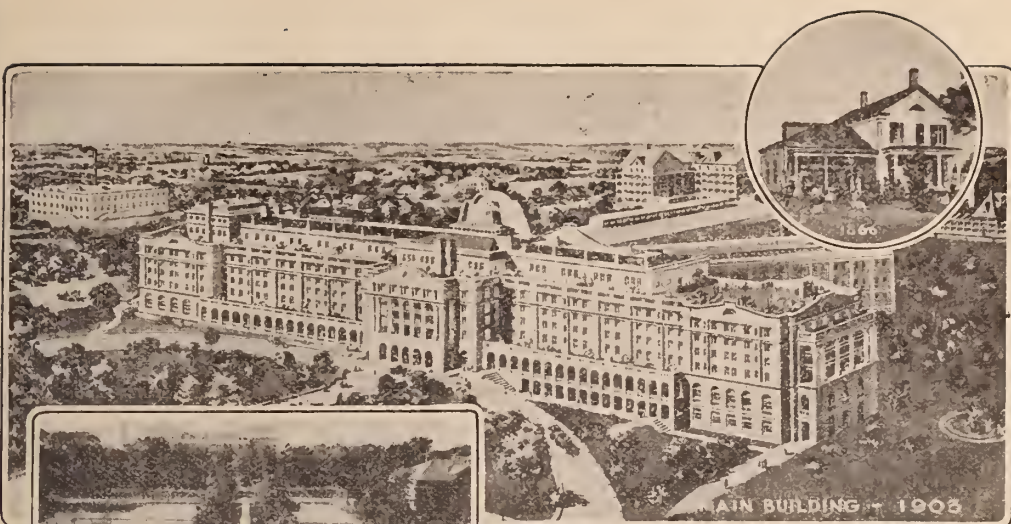
The caloric shock of sudden change from 70 degrees and 20 per cent relative humidity to outdoor air of 30 degrees and 80 per cent humidity (average winter condition) causes chronic congestion and inflammatory reaction in the air passages, and predisposes to winter catarrh.

It is interesting to note that at 65 degrees F., under the proper conditions, we can obtain a 40 per cent relative humidity, which is the natural standard for habitations. (Trans. Laryng. and Otol. Soc.)

Anaphylactic Reaction Occurring in Horse Asthma.—J. F. Goodale (Boston), in experiments on individuals suffering from horse asthma, found that the application of horse serum to an abrasion of the skin produced within a few minutes sharply localized edema and reddening. In three of his cases the introduction of the horse serum into the nose caused edema of the nasal mucous membrane, together with profuse watery discharge and sneezing.

He suggests a preliminary skin test to be made with horse serum in all cases that have previously received an injection of antitoxin derived from the horse, whether tetanus, diphtheria or plague serum. Furthermore, in all patients who are about to receive antitoxin or horse serum for the first time, inquiry should be made as to whether they have ever been disturbed by asthmatic symptoms when in the neighborhood of horses, and if so they should first be tested. (Trans. Laryng. and Otol. Soc.)

"The Reporting of Disease," by Louis T. Dublin (U. S. Public Health Reports, reprint No. 202), is a monograph showing the value of sickness registration, the present status of this question, and its bearing upon public welfare. The author outlines a model bill; explains a plan of campaign for cooperation between health authorities and physicians on the one hand and insurance companies on the other, and strongly advocates interstate reporting, because of the ease with which communicable diseases can be carried in connection with the movement of food products from one state to another. A central governmental agency in constant communication with all sections of the country is his suggestion for solving the problem of communicable diseases.



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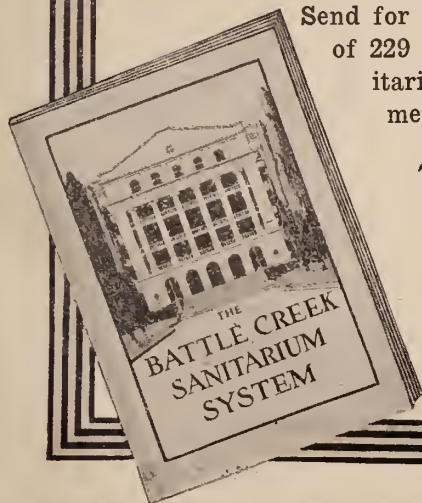
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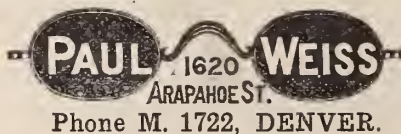
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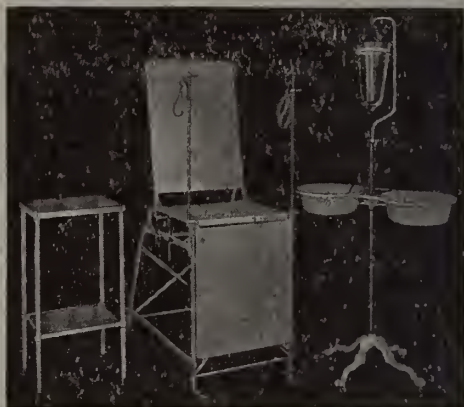
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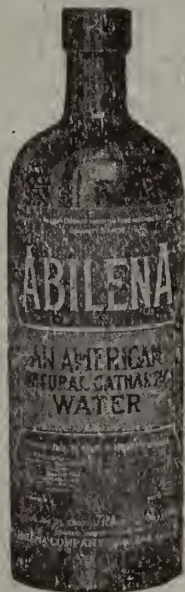
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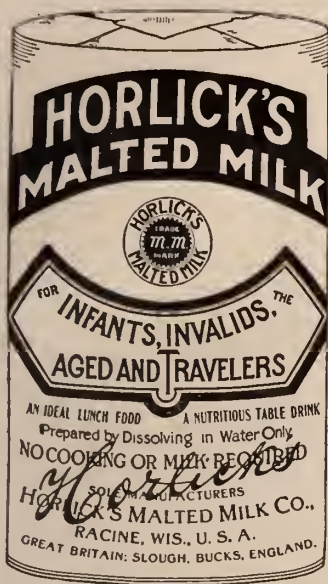
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Editorial Comment

THE DIVISION OF FEES.

A century from now it may appear that the most conspicuous service rendered to humanity by the American College of Surgeons was improvement in the technical qualifications of surgical practitioners. But within the present generation the relative importance of this sphere of usefulness may be eclipsed by the effect which the new organization will produce upon the practice of dividing professional fees. This custom has grown amazingly within the last two decades, and it is doubtful whether any of the steps hitherto taken for its restriction has produced an appreciable effect.

Plausible arguments have been put forward to show why it is perfectly just and proper for a surgical specialist to share payment received for his services with the general practitioner who referred the patient to him. Although such a practice must in the long run tend to throw responsible work into the hands of persons not properly qualified to undertake it, it is impossible to deny that division of professional fees is regularly resorted to by some men of great skill and excellent surgical judgment, and also at times by surgeons whose personality and ethical char-

acter otherwise leave little to be desired. It is true that some of these professional brethren satisfy their consciences and overcome the scruples of their friends by a subterfuge, such as that of employing the agent-physician to act as anesthetist or otherwise as an assistant in the operation, and paying for the assistance so rendered a liberal percentage of the sum received from the patient. But in the last analysis any such payment is made as a reward for the action of the physician in sending his patient to the surgeon.

The American College of Surgeons is unmistakably opposed to all such open or concealed departures from the straight and narrow way. In his fellowship address before the second convocation of the College in June last, James G. Mumford asks, "What is fee-splitting?" And he answers, "It is the buying and selling of patients. * * * It is graft; it is blackmail by the general practitioner; it is bribery by the guilty surgeon. Through such transactions the unscrupulous surgeon buys his patient from the unscrupulous family doctor as surely as he buys flour from the grocer."

THE WAR AS REFLECTED IN THE GERMAN MEDICAL PRESS.

"The war has started," says the *Münchener Medizinische Wochenschrift*, under

date of August 10, "and its paralyzing effects on civil affairs are already plainly noticeable. The halls of our printery are deserted, the numerous forces required to turn out our paper have been reduced to a handful, and many of our collaborators are in the field. Under the circumstances it is technically impossible to keep the paper up to its usual size. Even the present issue must suffer a reduction in the number of pages."

The same results are manifest on the other German medical publications, which show marked emaciation. The all-absorbing topic of war also shows its influence on the medical press in a plethora of contributions on military medicine. The journal above referred to has inaugurated a military surgical supplement which is sent gratis to every physician at the front both in the German and in the Austrian army. The first number opens with a very interesting article from the pen of Professor O. von Augerer on the treatment of gun shot wounds. The author served as a volunteer surgeon in the Franco-Prussian war of 1870-71 and is therefore able to compare the teachings of those days with the experiences gained in the Russo-Turkish war of 1877, the Spanish-American conflict, and the recent Balkan troubles. The old procedure of making large incisions, probing for the bullet and irrigating the wound with strong antiseptics has given way to the more conservative method of non-interference. This applies of course to small caliber gun shot wounds of the soft parts.

Between the lines of the scientific contributions as well as in the editorial comments one discerns the state of mind of our German confrères toward this world struggle. They are carried away with patriotism for their own country, just as English and French physicians are for the land of their birth. When philosophers and scientists who are supposed to possess

cold, calm reasoning and be above the petty differences of race or nationality indulge in chauvinistic utterances, it is not to be wondered at that resentment against the Japanese for obtruding themselves into the conflict leads a reader of the "Münchener" to protest against the presence of so many of the brown men in the German universities. In actual fact the list of theses published by the medical departments carries a large number of Japanese authors. The editor commends the criticism of his correspondent and gravely proposes the expulsion of all foreign students.

The German pride in their military organization is seen in the following: "The first week of mobilization of the German army is past and has demonstrated the excellent preparedness of Germany for the war. Those who observed the quiet and order with which this gigantic feat was performed, gained the consciousness that the machine working so promptly and noiselessly would not fail in the field."

The ban on alcohol in the army has been sufficiently dwelt on in the daily press to make further comment here unnecessary.

The medical men at the front will not suffer the loss of their practice at home nor will their families be in want, as their colleagues will take care of their patients during their absence and turn the proceeds over to their dependents.

New editions of books on military surgery and hygiene are being printed, thousands of copies having been sold on the outbreak of the war.

The Farbwerke Bayer and the Zeiss optical works at Jena have contributed liberally to the Red Cross. Many eminent men, such as Röntgen and Lenard, who had received gold medals from foreign societies, have donated their medals to the same cause.

The attitude toward England is seen in the following under date of August 31:

"Of this week's reports of victories—Namur, Longwy, Manbeuge, Manonviller, etc., the news of the complete rout of the English at St. Quentin has called forth the greatest jubilation. The German people regards the English government as the real starter of the present war. Nothing will give greater satisfaction than the defeat of this perfidious opponent."

An echo of "Patronize Home Industry" is seen in the call to German physicians to prescribe only German preparations and specialties!

And while this useless struggle continues, the laboratories are deserted, the lecture halls are empty, science is retarded, and progress set back. Civilization is after all but a thin veneer. P. H.

GORGAS AS ECONOMIST.

It is always interesting to encounter professional colleagues in another capacity. We are so much in the habit of thinking of Drs. X, Y and Z as the obstetrician, the surgeon and the general practitioner that we feel something of the pleasure of original discovery on learning that they are also active, let us say, as water color artist, lay preacher and social reformer, respectively. There would be a special interest for most of us in learning, for example, that Professor Ehrlich had pronounced views in favor of a republican form of government, or that Metchnikoff, the Parisian, believed in a constitutional monarchy.

Some such novelty must have attached to a testimonial dinner recently given at Cincinnati in honor of Surgeon-General William C. Gorgas. To most of us the name of Gorgas conjures up the mental picture of a military surgeon who by his labors has demonstrated, to use his own phrase, "that the white man can live and thrive in the tropics," or, in other words, that

pestilential disease can be banished from these regions. By a coincidence the majority of the three hundred present at the testimonial dinner, including Dr. Gorgas himself, proved to be "single-taxers." Gorgas remarked that he had friends present that evening with whom he had been associated for twenty years without knowing of their "single-tax" opinions.

The following are some of the sentences in which the famous military surgeon expressed himself in favor of the economic doctrine referred to: "I am a single-taxer, I think, because my life work has been that of sanitation. Sanitation is most needed by the class of people who would be most benefited by the single tax. That poverty was the greatest single cause of bad sanitary conditions was very early impressed upon me. * * * In a city such as Panama or Havana the vacant lots and unimproved neighborhood were the localities which always gave us the most sanitary trouble. * * * When the great valleys of the Amazon and of the Congo are occupied by a white population, more food is produced in these regions than is now produced in all the rest of the inhabited world. But unless we can so change our economic laws that this wealth will be more fairly distributed than it is now by the races occupying the temperate zone, mankind will not be greatly benefited."

WHITE SETTLERS IN THE TROPICS.

The address by Surgeon-General Gorgas, above referred to, contained a series of interesting assertions concerning the future of the white race in the tropics. Gorgas points out that the real scope of tropical sanitation will extend far beyond the work of the United States government at Panama. "It has been shown," he says, "that the white man can live and exist in good health everywhere in the

tropics." At Panama, "among our large force of laborers, we had for ten years some ten thousand Americans. * * * Most of these American men did hard manual labor, exposed to the sun, rain and weather conditions day in and day out, yet during that time their health remained perfectly good. * * * The women and children remained in as good condition as they would have been had they lived in the United States. * * * The amount of wealth which can be produced in the tropics for a given amount of labor is so much larger than that which can be produced in the temperate zone for the same amount of labor, that the attraction for the white man to emigrate to the tropics will be very great when it is appreciated that he can be made safe as to his health conditions at a small expense."

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Original Articles

THE TREATMENT OF WEAK AND FLAT FEET.*

GEORGE B. PACKARD, M. D., F. A. C. S., DENVER, COLO.

The literature of weakened and flat feet during the past few years shows the great interest taken in the subject, the frequency of the disability, and also the diversity of opinions regarding the etiology and relief of this troublesome condition. In the last report of one of the largest orthopedic clinics in this country, it was shown that over twenty-nine per cent. of the new cases were of this nature, while in 1890 these cases represented less than three per cent. in the same clinic. That this affection is the cause of a great deal of disability, not only in the feet, but in other parts of the body, is now generally recognized. Evidence of weakened feet, such as indefinite pains and disability, are generally present before the flattening and lowering of the arch take place. In typical flat foot the motions are restricted, particularly adduction of the forefoot, and when deformity has taken place it is characterized not only by a depression of the arch but also by a lateral displacement caused by a persistent abduction of the foot.

In considering these cases, it is always well to bear in mind the relationship of the foot to the leg in weight bearing. Normally the body weight passes through the center of the knee and ankle joint over the dorsum of the foot to the second

*Read at the annual meeting of the Colorado State Medical Society, September 9, 10 and 11 1914.

toe. In the everted position of the foot which is present in these cases, the weight passes to the inner side of the foot and produces strain of the astragalo-scaphoid articulation.

The persistent abducted position of the foot, therefore, is an important anatomical factor in the production of foot strain and ultimate deformity. This abnormal position of the foot is increased by faulty footwear, occupation, increase in weight, genu valgum, and debilitated states due to various causes. No doubt one of the most common causes of flat foot is the compression of the front of the foot by improper shoes which weakens the muscular support, particularly the tibials and the muscles of the first metatarsal and great toe. Heels that are too high also increase the strain and weight on the anterior portion of the foot, and interfere with the proper function of the anterior arch. Hallux valgus is also very closely associated with this deformity and may very frequently be an etiological factor in its production. This deformity is also caused by improper shoes and stockings with pointed toes. The interference with the adduction of the big toe deprives the long arch of a natural means of support, and contributes very materially to weakness of this arch. Muscular development of the sole in some adults and pads of fat in infants sometimes give the appearance of flat foot, while a careful examination shows that it does not exist. The patient usually stands and walks with the foot abducted, the amount of deformity depending upon the amount of weakness of the muscles and ligaments. Those whose occupation requires constant standing suffer most from the muscular and ligamentous strain.

If this condition persists without treatment, it is soon followed by interarticular irritation and muscular spasm. In some cases the spasm of the peroneals is very

pronounced. The last stage or more severe degree is where adhesions and bony changes have taken place.

While some flat feet are not painful, as a rule pain is present when the feet are in use. Pain in the heel is common, probably due to the heel walk and strain on the plantar ligaments which are attached to the os calcis. Pain may also be present in the knee, hip, and lumbar region. Later the usual symptoms of bone irritation and muscular spasm develop, and the patient, after prolonged sitting or on rising in the morning, walks with great difficulty.

If normal function can be re-established and the abnormal attitudes overcome, a great deal can be accomplished. In other words, we must aim to make passive motion possible without pain, spasm, or deformity, and to strengthen the muscles, thus restoring function and overcoming deformity and obstruction. The treatment will depend upon the stage or degree of disability. The indiscriminate use of foot plates will not fulfill the indications in the treatment of these cases, and in some cases may do a great deal of harm by weakening the muscular support of the foot.

In mild cases or where the feet seem normal at rest but abducted upon weight bearing, the shoes may be modified in such a way as to correct the abnormal position. Thickening the sole and heel on the inner side of the shoe, or extending the heel forward, will change the position of the foot sufficiently to throw the weight of the body outside the center of the ankle joint. The use of arch supports will generally be suggested to these cases of beginning weakness, and in many instances will give temporary relief, and it may be necessary to use them if for any reason the patient can not be taught to stand and walk properly. Their prolonged use, however, will weaken the foot

by stretching the muscular and ligamentous structures.

The next stage or degree of disability is when muscular spasm develops, with increase of pain and abduction of the foot. It will be necessary now to put the foot at rest and this can generally be done in the milder spasmodic cases by adhesive plaster strapping, the foot first gradually but rather forcibly being put in the corrected position. Arch supports may be used later in these cases, but should not be used until the spasm and resulting pain are relieved. In the more severe cases of this variety an anesthetic must be given, and plaster of Paris applied after the foot has been over-corrected. It is very important also to maintain dorsal flexion as well as adduction. If adhesion or bony changes have taken place, the same effort should be made to correct the deformity if possible by manipulation. The length of time required for the foot to remain in the plaster splint will depend upon the amount of traumatism at the time of manipulation. Walking on the casts in the corrected position should be encouraged. After the pain and soreness are relieved an arch support should be fitted and exercises used to strengthen the foot in its new position.

There are some cases where it is impossible to correct the position and deformity by these methods of treatment, and there are also some cases that show a constant tendency to relapse. In these cases an arthrodesis of the astragalo-scaphoid joint should be performed. That a shortened tendo Achillis accompanies quite a large percentage of cases of beginning weak foot is the belief of many writers. Dr. Shaffer of New York first called attention to this fact many years ago. I have occasionally been able to demonstrate the condition. In such cases the tendon should be lengthened. It also has

an important bearing on the subject of footwear in relieving symptoms.

In considering proper foot wear we must remember that many persons with deformed feet can not walk with any degree of comfort with correct or improved style of shoes. Each case must be fitted according to the existing deformity. With acute foot strain correct shoes and arch supports may increase the pain. A shoe for a normal foot should be first considered and the aim then be to approach these features gradually and as much as possible with the existing trouble.

The following important features of the shoe for a normal foot have been suggested by Sampson and others. The shoes must correspond to the shape of the foot. The inner side of the shoe should be straight, and there should also be plenty of room on the inner side as this is the thickest part of the front of the foot. The width of the forward part of the shoe should correspond to the weight bearing position at that part. There should be no dorsal flexion of the front of the shoe, as it injures the transverse arch. The sole of the front of the shoe should be flat from side to side. The heels should be low and broad.

These are good suggestions, but it will be found that the thickness of the heel must vary according to the anatomical conditions of the foot, and a sudden change from a high heel to a low heel will very frequently increase the symptoms.

We must also consider in all these varieties of foot trouble the general condition of the patient—whether the local condition is either caused or complicated by infections or vascular changes. Marshall, in a recent valuable paper on this subject, emphasizes the fact that we can not expect results if we simply treat the mechanical features without considering all the findings and needs of the individual case.

In conclusion it may be said that the

various devices, such as shoes with flexible shanks and stiff shanks and the different kinds of arch supports, have merits, but that they may be beneficial or harmful according to the individual case. It simply shows the different phases through which these cases pass. The indications and contraindications can generally be determined by a careful study and diagnosis of each case. Furthermore, artificial aids should be dispensed with as soon as possible, or at least reduced to a minimum degree in order to re-establish the normal function of the foot. The general condition of the patient should be carefully considered, for some of these patients are in the same class as those suffering from weak backs, drooping attitude, and visceral ptoses. Also the vascular elements and various infections may be as important from a therapeutic standpoint as the mechanical features. When all these factors are considered, I believe the number of people suffering from this disability will be very materially diminished.

732 Fourteenth Street.

DISCUSSION.

Frank Finney, La Junta: This subject is one of great interest to all surgeons who are engaged in making examinations for industrial occupations. Nowadays, you all probably know, employes or applicants for employment in railroad service and in many other branches of industry are being examined, or are having physical examinations made before they are employed.

Not very long ago I saw in Dr. Corwin's office in Pueblo a young man who had been in the employment of the Colorado and Southern or Denver and Rio Grande Railway, who had met with a fracture of one leg. He had been in the hospital for several months and was then discharged from treatment, but was unable to return to his former employment as a brakeman. At this time he was trying to get his total disability insurance from the organizations to which he belonged, but failed to do so, and came to Dr. Corwin for an expert opinion as to whether he was totally disabled, so that he could use this opinion with his order to get his insurance. Dr. Corwin asked me to look at him while he was busy with another case. In examining his leg I asked him to take the other shoe off to examine that foot and I found he was flat-footed in both feet. He would not have passed a physical examina-

tion for the army. His disability was largely due to the fact he was flat-footed and not to the fact he had been injured. That brings out the point that many of these men who are examined for railroad service, if they are flat-footed, are liable to have broken down arches. This disability handicaps the applicant, and may involve the railroad company or order to which the applicant belongs in the payment of damages for something that was naturally a defect when he entered the employment. For that reason the subject is of great interest to those of us who are engaged in making these examinations.

S. Fosdick Jones, Denver: By the term flat foot we mean a static condition of the foot in which there is faulty weight bearing, allowing the foot to assume a valgus or pronated position. It is not the lowering or raising of the "arch" of the foot which determines faulty weight bearing. A low "arched" foot may be a perfectly normal one. A better term for flat foot, therefore, is weak foot, as has been suggested by several orthopedic surgeons.

The treatment of weak or flat foot may be divided into four distinct phases. First: the overcoming of the deformity and muscular spasm by mechanical means. This may require simple adhesive plaster strapping, or the application of a plaster of Paris dressing, holding the foot in inversion (varus) and dorsal flexion. Second: The application of a properly fitting arch support which has been made over a plaster of Paris model of the foot. No particular form of arch support is suitable for every case of weak or flat foot. The Whitman arch support, properly made and fitted, is of the greatest possible service and affords permanent relief in many instances, but not in all cases. It must be remembered that all rigid types of arch supports are corrective measures and as soon as the deformity of the foot is corrected these corrective plates should be removed. Ready-made arch supports should be heartily condemned. Third: Exercises, which are very important, to develop the muscles and ligaments which support the arch of the foot, and to hold the foot in the corrected position. Fourth: The wearing of proper shoes, modified to suit the individual case. Here again no one last or style of shoe is suitable for every case of weak foot. The wearing of proper shaped stockings is also important. Dr. Lewis A. Sayre of New York first described the right and left foot stocking, and advised their use in these cases of static foot trouble, and in some cases digital stockings were used. At the present time one or two manufacturers are carrying this type of stockings.

Clay Giffin, Boulder: In addition to the points that have been raised in the paper and in the discussion, I have one other point to urge because it is one which almost all of you have, at times, occasion to utilize. I think both Dr. Packard and Dr. Jones will agree with me in this, that following fractures of the lower leg you get flat-foot or a deformed arch, one of the two, if you do not take steps to prevent it. The one point I want to call attention to is this, that every fracture of the lower leg

should be treated at the time you put up the fracture with an arch supporter, either improvised or made to fit as accurately as possible in a certain case. If you do that you will have less trouble on the part of the patient when he or she first begins to walk after a fracture. An arch supporter should be incorporated in every splint or cast of the lower leg.

H. W. Wilcox, Denver: Dr. Packard has covered the subject very comprehensively. He spoke of the fact that the first symptom noticed in these cases is indefinite pain, sometimes in one place, sometimes in another. In ninety-five cases out of one hundred patients come complaining of pain in some region of the foot. Most usually the location of the pain is where the most strain comes, at the astragalo-scaphoid joint. The next most frequent location is under the heel. This has interested me considerably because recently I have seen several cases who complained excessively of pain under the heel. This is not necessarily a symptom of flat foot in every case, for there are two other conditions in which it may be a prominent symptom. One of these is gonorrheal infection where the periosteum seems to be irritated, and in which we get definite bony outgrowths on the lower portion of the heel. Another case is where the patient's occupation is such that he has to stand on the feet a great deal, as with a policeman, when the bursae on the lower surface of the os calcis may be irritated and cause great discomfort. Such cases are spoken of as policeman's heel. I believe in cases of foot-strain we do get an anatomical condition where the pain is prominently located in the heel. In a case I recently had the privilege of seeing the X-ray picture showed definite bony spurs on the under surface of the os calcis, and removal of these relieved him entirely of the painful condition.

A. J. Markley, Denver: It may seem somewhat irrelevant to speak of diseases of the skin in connection with the subject Dr. Packard has brought before us; there is, however, a definite relation between them. Aside from local irritation and various forms of local infection, the most common cause of disease of the skin is a disturbance of its vascular and nervous mechanisms; and Dr. Packard has pointed out, at least by inference, that there are distinct vascular and nervous disturbances in flat-foot. It has come under my observation a number of times that very persistent and disturbing and altogether disabling eczemas of the foot are frequently associated with such conditions as Dr. Packard has described, and it has been my experience recently to observe a case of persistent and annoying eczema involving the toes, soles and dorsal surfaces of both feet. The patient had been annoyed by the condition for several years. All sorts of treatment had been resorted to, entirely without effect. If she went to bed and took complete rest the condition would disappear, but as soon as walking was resumed and the weight was thrown upon the feet, the condition reappeared in all its particulars. As soon as the case came under my observation it impressed me at once as having all the characteristics of what we regard as

the neurotic form of eczema, which is due to disturbance of the nervous mechanism of the skin. On observing the kind of shoes this woman wore and considering the particular kind of pain which she referred to the backs of the legs and up to the knees, I thought she had flat-foot. She was referred to a competent practitioner, who gave the proper directions as to the correction of the deformity, and with little or no treatment directed to the eczema she gained in a few weeks almost absolute relief.

I would commend to you the custom of looking carefully into the structure of the foot when patients are afflicted with persistent and annoying eczemas in this region.

A. T. King, Pueblo: I have had some experience in railroad surgery, and in the last year I have noticed this fact that many of our engineers are complaining of pain in their feet and heels. The railroads have materially increased their motive power, so that we have very large engines, and it occurs to me that this apparently new complaint is brought about by the necessity of engineers standing continuously for a number of hours upon a vibrating surface. I find that arch supports and such devices give them no relief whatever. The arch is not broken, but they complain of having pains in the feet, and more particularly in the heels, and in the calf of the leg. I am unable to attribute this condition to gout or rheumatism. I have attempted to relieve the pain by advising different footwear, and in some instances they have and in others they have not received any relief. It is just possible that this condition may require thorough consideration from the standpoint of occupational disease.

It has been stated here that flat-foot does not necessarily imply a broken arch and is not necessarily troublesome. I agree with the essayist. A flat-foot that is flexible is painful to a greater or less degree, while a flat-foot that is firm, with an inflexible arch, gives no trouble.

Russell T. Ramsey, Denver: The general practitioner has not been heard from on this very important subject. What should be the attitude of the general practitioner in regard to these cases? Most of the cases probably originally appear before him, and it is important that he should understand the subject sufficiently to make a definite diagnosis, and to institute proper treatment in the milder cases. A number of these cases are going to the deformity shops. They see the windows in which braces are advertised, and they patronize these shops for the simple reason that the general practitioner in the past has failed to recognize the trouble and to institute definite mechanical treatment to give partial or preliminary relief.

I want to emphasize two or three points that Dr. Packard has brought out. In the first place, most of the cases I have seen have been more or less disabled, or below par in general health. Let us suppose the patient is a working girl. You inquire into her history and habits and you find she frequently takes from

eight to ten cups of coffee a day, especially on very busy days. In a short time that will bring on dyspepsia or some disease of the stomach, bowels or nervous system. This is the way I handle such cases: I inquire into the general health and habits of the patient, especially as to diet, sleep, occupation, in fact, anything that may be weakening the system, applying such corrective and tonic treatment as may be needed. A properly fitting shoe should be recommended and certain exercises to strengthen the muscles of the foot and leg. I use the strapping of the foot which Dr. Packard has mentioned, paying special attention to dorsal flexion and to adduction in applying the adhesive plaster. It is surprising how much relief is afforded by carrying out this line of treatment. In some of the milder cases the patient may be entirely relieved.

I recall the case of a patient who came under my observation two or three years ago. She was a servant girl, rather large. I treated the case from the general practitioner's standpoint and strapped the feet. I applied the strapping two or three times in two months. That was two years ago or more. She has had no trouble since and is attending to her duties without any inconvenience. The strapping with the adhesive is done the same way as in sprain of ankle, with the foot somewhat flexed and adducted.

George B. Packard, Denver (closing): One speaker referred to the natural flat-foot, without symptoms. If those cases are free from pain, it is better not to disturb them. The point I wish to emphasize is that simply pushing up the arch with a support will not give a permanent result, but these patients should be taught to walk and overcome the adduction, because that is the important element of disturbance. If proper exercises and proper methods of walking are followed out, and the artificial aids dispensed with as soon as possible after the deformity is corrected, the subsequent treatment can be carried out by so balancing a proper shoe that the weight falls outside of the center of the ankle joint. In most cases that will act much better than continuing with supports which will weaken the muscles and ligaments.

CHRONIC POLYARTHRITIS IN CHILDREN* (Still's Disease).

(Report of Two Cases, With Photographs and Radiographs.)

**S. FOSDICK JONES, M.D., F.A.C.S.,
DENVER.**

In November, 1896, Dr. George F. Still, of London, read before the Royal Medical and Chirurgical Society a paper describ-

*Read at the Annual Meeting of the Colorado State Medical Society, Sept. 9, 10 and 11, 1914.

ing a form of chronic joint disease occurring in children, in whom there was a pro-



Fig. 1. Photograph of Case 1, showing the marked swelling of the wrists and the fusiform swelling of the phalangeal joints.

gressive enlargement of the joints, and an accompanying enlargement of great or moderate degree of the spleen and lymphatic glands.

The writer has had the opportunity of observing two typical cases of this rather unusual form of chronic multiple joint involvement which, together with the clinical report of these cases and a brief review of the literature upon this subject, will form the theme of this paper.

Still¹ in his original article defines the disease which bears his name "as a chronic progressive enlargement of the joints, associated with a general enlargement of the lymphatic glands and spleen."

The onset is usually insidious, occurring before the period of second dentition, and commonly manifesting itself before the fifth year of life. Still¹ reports that the earliest case was observed at fifteen months. In older children, such as in one of the writer's cases, slight pain or stiffness in the cervical region of the spine or

in one joint is complained of by the patient; very rarely the onset may be acute,



Fig. 2. Photograph of Case 1, showing the characteristic swelling of the ankles, knees, elbows, wrists and fingers, and the muscular atrophy of the arms and forearms.

accompanied by high fever and rigor. The swelling and enlargement of the joints is smooth and fusiform and is quite characteristic, presenting no signs of local heat or redness, and feeling like a thickening about the joint, with no bony or cartilaginous enlargement and no joint crepitation. In the acute cases pain and tenderness are only elicited on motion of the joint, although marked limitation in range of motion is invariably present, resulting in contractions and deformities. The joints most frequently and earliest involved are the wrists, knees and cervical spine, and

later, as the disease progresses, the elbows, fingers, ankles and toes become affected. In one of the writer's cases the sternoclavicular joint was involved early in the disease. Suppuration or bony ankylosis does not occur, but atrophy of the muscles is an early manifestation and invariably takes place.

The inguinal and cervical lymphatic glands are usually enlarged, this being a distinctive feature in these cases of Still's disease. The glands are not tender on pressure and do not suppurate. As the joint manifestations increase the glands invariably grow larger, this being especially noted in the inguinal lymphatic group. The splenic enlargement varies greatly, but is usually present; although in two typical cases reported by Llewellyn Jones² there was no increase in the size of the spleen. In some instances the spleen can be palpated two fingers' breadth below the free border of the ribs. Enlargement of the liver also occurs in some cases, and although not mentioned by Still in his report of nineteen cases,

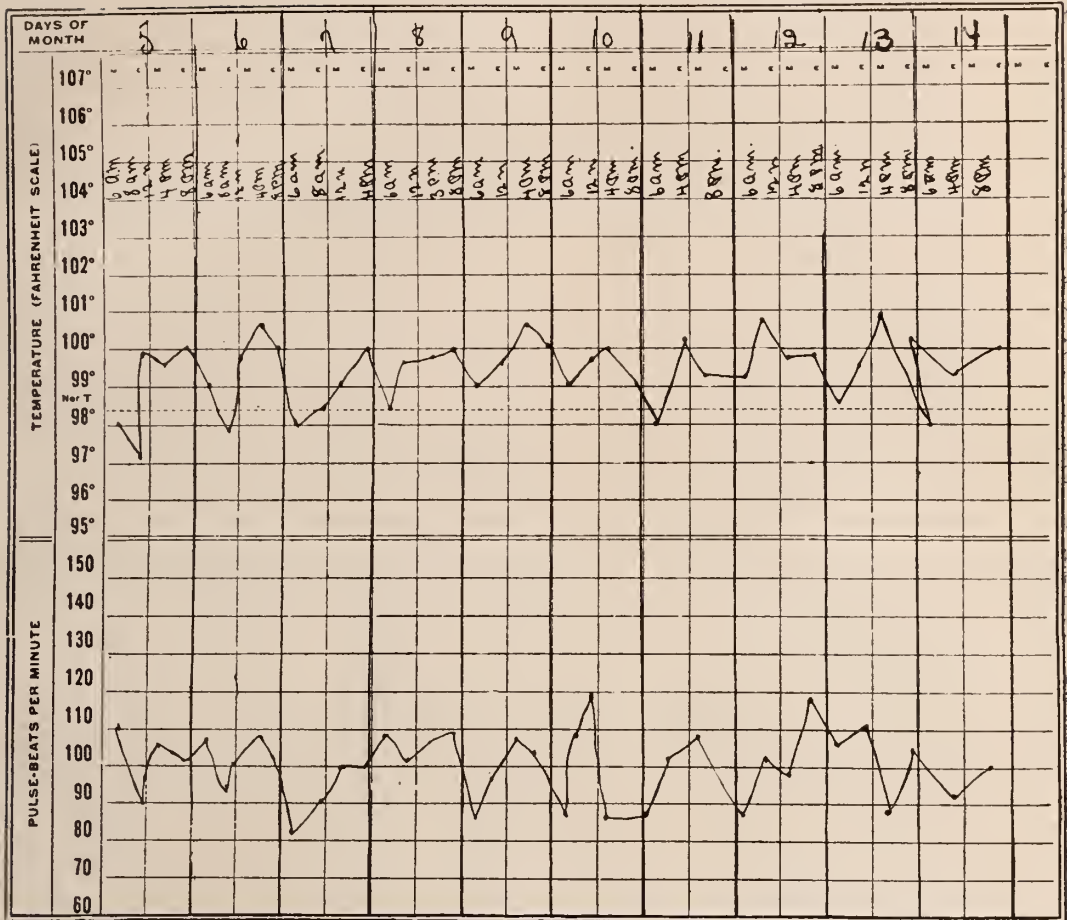


Fig. 3. Photograph of Case 1, showing the characteristic swelling and enlargement of the phalangeal, metacarpal and wrist joints.

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The temperature chart of Case 2, recorded during the most acute stage of the disease, showing the irregular temperature curve and the increased pulse rate.

has been observed by Whitman⁴ and other writers.

Anaemia, a waxy pallor and general cachexia, and cardiac haemic murmurs are often present. Endocarditis is sometimes associated with the disease, resulting in distinct valvular affection. In one of the cases reported by F. Parkes Weber³ in 1905, a mitral valvular disease was present. According to Still, the temperature curve seems to be of two varieties: "One shows periods generally lasting only a few days, of pyrexia followed by a longer interval of apyrexia; the other type

shows more or less continuous slight pyrexia." The rise in temperature is not usually associated with an acute exacerbation in the involved joints. A temperature of 100° to 101° is observed in some cases. In these children, although underdeveloped, there is no cerebral lesion noted, and they are usually mentally alert.

Still's disease may be considered one of a progressive type, but improvement of a temporary nature is quite common. Frequently the disease apparently becomes stationary, but hopeless crippledom very

often develops in the course of months or years. Complete recovery is rare; however, both Whitman⁴ and McCrae⁵ report cases in which recovery occurred. The disease is never fatal, death taking place from some intercurrent affection.

The etiological factor is still obscure. Rheumatism, gout, tuberculosis, syphilis or unhygienic surroundings play no part, apparently, as a causative agent.

The pathological anatomy as first described by Still, was based on the necropsy findings of three of his cases. He says, "The joints show a marked thickening of the capsule and of the periarticular connective tissue. The synovial membrane of the joint was thickened and vascular, and fibrous adhesions were present. The carti-

lage was normal and healthy and there was no fibrillation nor osteophytic changes or eburnation of the bone, either in or about the joints."

Section of the lymphatic glands was normal. The spleen was distinctly enlarged, but was normal on section, and the pleura and the pericardium showed marked adhesions." In one of Still's cases there was a thickening of the mitral valve.

In the pathological findings of a case reported by Royal Whitman⁴, the liver was found to be greatly enlarged, being about three times its normal size, and showed amyloid degeneration. The spleen also was increased in size, was soft in consistency, and showed areas of amyloid change.



Fig. 4. Skiagram of the right and left hands of Case 1, showing the fusiform, swelling and enlargement of the phalangeal and wrist joints. There is no involvement of the bony or cartilaginous structures.

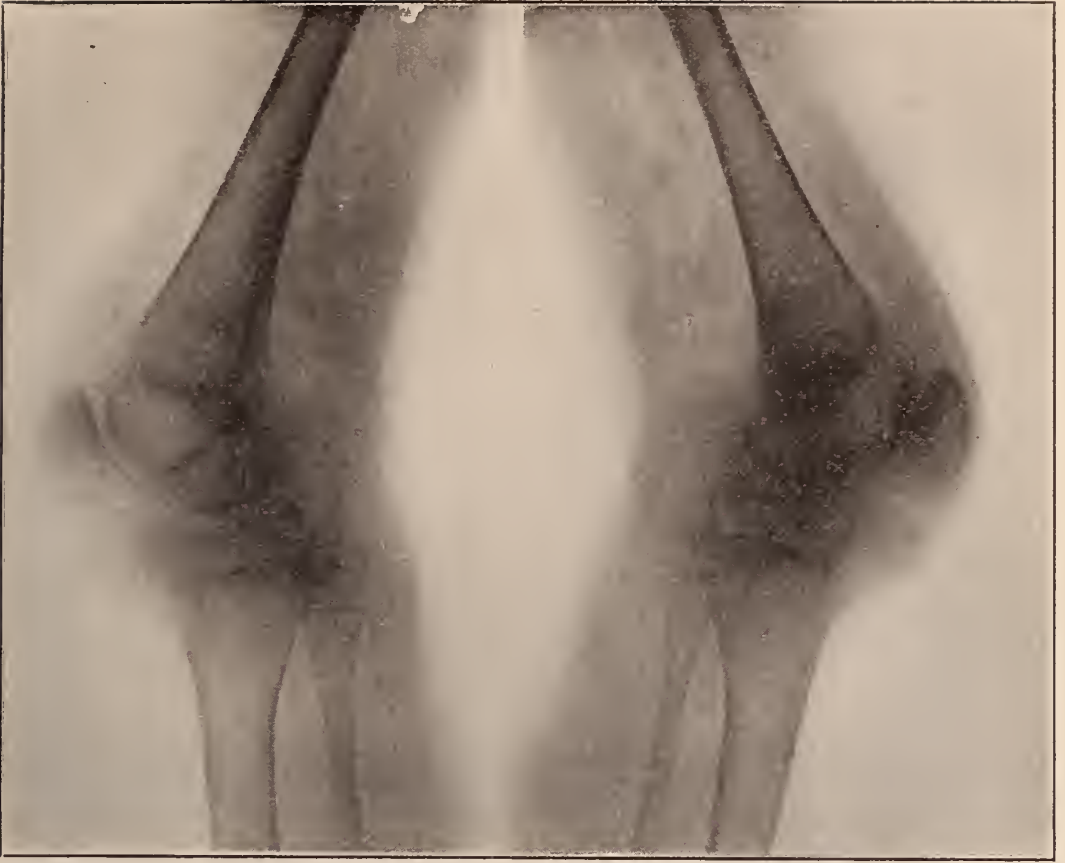


Fig. 5. Skiagram of Case 1, showing the typical X-ray picture of the right and left knee joints in Still's Disease. The swelling about the joint can be clearly seen. The bones and cartilages of the joints are normal.

In this case the joint cartilage presented deep "worm-eaten" perforations, with erosion of the cartilage of the right elbow. The cortical substance of the bone was thin, and the spongy portion of a dark reddish color. The fluid removed from the joint cavity was found to be normal.

The following report of two typical cases occurring in the writer's practice will illustrate the clinical picture presented in Still's disease:

Case one was that of a boy seven years of age who was born in France and had lived in Colorado for four years. At birth he was a healthy, normal child, weighing eight pounds, and he was breast-fed until the age of eleven months. He was the youngest of three children.

The father and mother are both living and in excellent health and there is no history of tuberculosis, syphilis, rheumatism or malignancy in the family. At the age of three, the boy had a mild attack of scarlet fever, pertussis and measles. So far as the writer was able to ascertain, the disease came on acutely, affecting simultaneously the right and left knee joints. These joints became enlarged and painful, but no redness of the skin over the knee joints was ever observed. He was brought to the County Hospital of Denver and was admitted to the orthopedic service. On examination the child was seen to be fairly well nourished, but slightly anaemic and under weight. The heart and lungs were normal, and the urine was negative.

The spleen by percussion showed distinct enlargement, and was easily palpable. The



Fig. 6. Photograph of Case 2, showing the characteristic swelling of the elbows, wrists, fingers, knees and ankle joints, and the resulting deformity of the left wrist which is in flexion and radial abduction. Marked muscular atrophy of the upper extremities can be seen in this photograph.

liver apparently was normal in size, and could not be felt below the costal margin. The right and left inguinal groups of glands were enlarged, but were not tender on pressure. The cervical and axillary glands were not palpable. There was ten-

derness over the left sterno-clavicular articulation.

The skin was normal and showed no exoriations or eruptions. There was distinct atrophy of the muscles of the thighs and calves and to a lesser degree there was muscular atrophy of both the forearms and arms. There was no rigidity of the spine, and motion of the entire column was normal.

The most characteristic changes were seen in the knee joints and in the finger and wrist joints of the right and left hands. The knees presented a typical fusiform appearance, and motion of the joints was very painful and restricted. Both knees contained fluid, but there was no joint crepitation, and no local heat. Flexion was limited to about ninety degrees, and extension could only be accomplished to 160°. There was distinct thickening



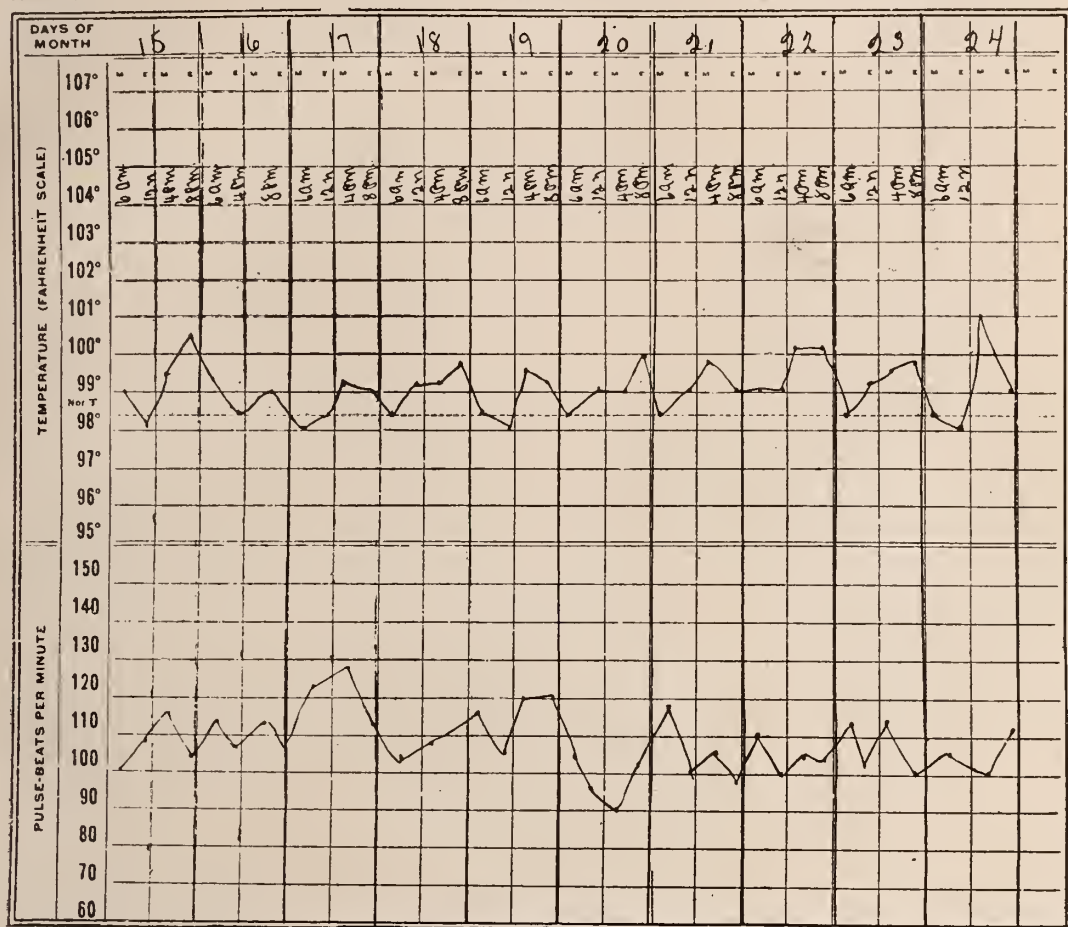
Fig. 7. Photograph of Case 2, showing the elastic, fusiform swelling of the wrist and fingers, and the flexion deformity of the left wrist joint.

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The temperature chart of Case 2, recorded during the most acute stage of the disease, showing the irregular temperature curve and the increased pulse rate.

and infiltration of the periarticular structure about the knee joints.

The right and left hands showed a symmetrical elastic fusiform swelling of the metacarpal and phalangeal joints. There was swelling and periarticular infiltration about the wrist, but motion of these joints, although restricted, was not painful. As the disease progressed, both ankles and elbows became affected. The Von Pirquet tuberculin skin test was negative. The blood picture presented a slight degree of anaemia, the haemoglobin being 70 per cent.

The differential count was as follows: polymorphonuclears, 78%; eosinophiles, 3%; basophiles, 0%; large mononuclears and transitional forms, 12%; small mononuclears, 7%.

During the child's sojourn in the hospital he developed a double lobar pneumonia and was under the care of Dr. Henry Sewall. The pneumonic involvement resolved by lysis, and no complications due to this disease arose.

The treatment instituted for the relief of the polyarthritides consisted in rest and immobilization of the joints during the



Fig. 8. Skiagraph of the right and left feet of Case 2, showing the infiltration and enlargement about the ankle joints and the absence of bone or cartilaginous involvement.

acute and painful stage, followed by gentle passive motion and massage.

Syrup of iodide of iron, combined with cod liver oil and maltine, was used.

One year was spent in the hospital, during which time the child greatly improved and the pain in the joints entirely disappeared. He gained in weight and was able to walk without the use of apparatus, and was finally discharged to return to his home in Paris. The accompanying photographs and skiagrams more clearly illustrate the clinical manifestations spoken of in the text.

The second case observed was of a girl of thirteen years, who has been under the writer's care at the Children's Hospital in Denver since November 25, 1913*. The history is as follows:

The father is living and in good health and the mother died of peritonitis, probably due to some pelvic condition. The patient had the usual exanthemata, measles, scarlet fever, and chicken pox, when a young child. No family history of tuberculosis, rheumatism, syphilis or cancer was elicited. The girl is one of two children, and with the exception of severe attacks of acute tonsilitis until three years ago, at which time the tonsils were removed, she had been a well, healthy child up to the time of her present illness.

One year and a half ago she began to have pain in the metatarsal and phalangeal joints of both feet, and began to walk with a rather shambling awkward gait.

*Was kindly referred to me by Dr. G. Kinsley Olmsted of Denver, Colorado.

For this painful condition of the feet medical aid was sought.

The examination showed a slender girl, quite anaemic, walking with a decided limp, holding the feet rigidly and trying to guard each step as she walked, as if in pain.

The head was bent forward slightly and pain on motion of the cervical spine was noted. The dorsal and lumbar column was normal. The anterior cervical glands were palpable.

The heart and lungs were normal. The spleen could be felt at the costal margin. The liver was not enlarged. The urine was negative. At the time of her admission to the hospital the metatarsal and phalangeal articulations were distinctly

enlarged, but not painful except over the head of the first metatarsal bone of the left foot. Here there was present a marked hallux valgus, with, however, no enlargement of the bursa over this joint.

An operation for the correction of the hallux valgus was advised, and was performed on November 29, 1913. The wound healed by primary union and the patient made an uninterrupted convalescence; the immobilizing splint was removed and at the end of three weeks she was up and about the hospital. Four weeks from the time of her admission the girl began again to complain of pain and stiffness in the cervical spine. Flexion and rotation of the neck was most painful, but no muscular spasm was noted. Within a few days



Fig. 9. Skiagram of the right and left wrists and hands of Case 2, showing the typical fusiform enlargement about the phalangeal joints and the absence of any involvement of the bones or cartilages.

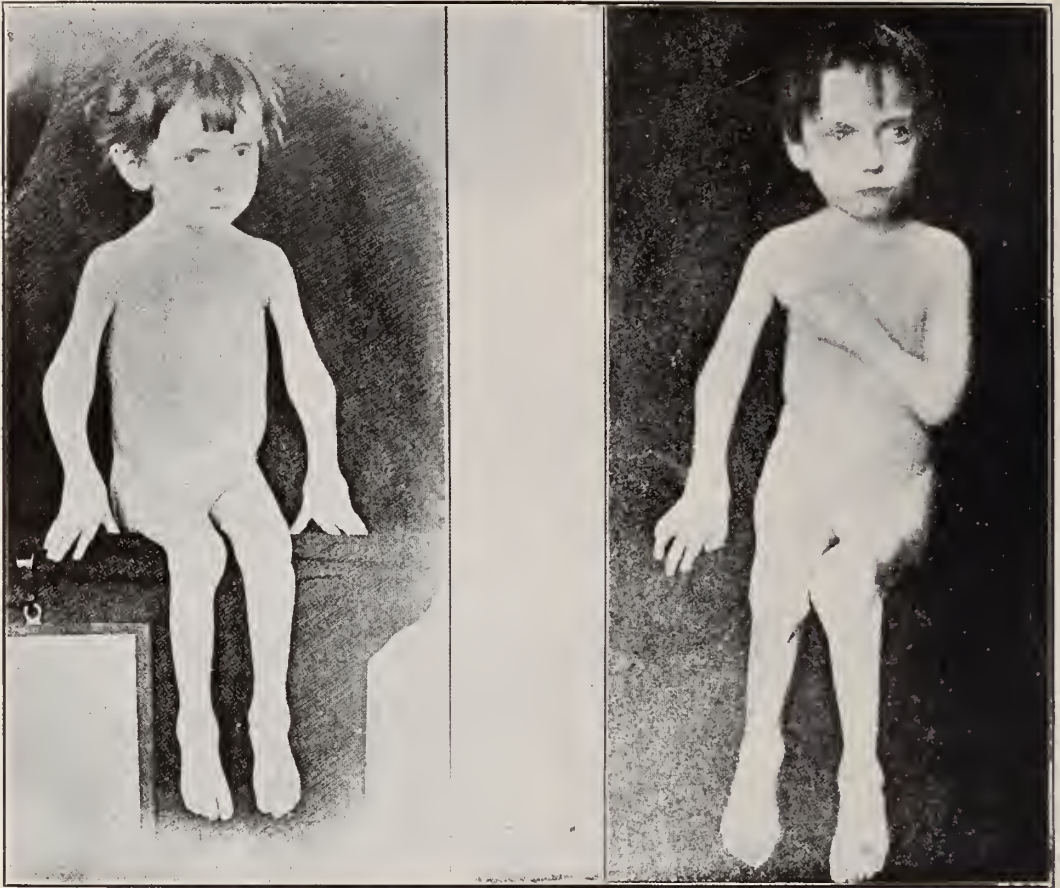


Fig. 10. Reproduction of a photograph of one of Dr. George F. Still's cases, recorded in his original article.

after the pain in the neck was complained of the left wrist and phalangeal joints became swollen and presented a fusiform enlargement, elastic in consistency, painful on motion, with no local heat or redness. One week later the right wrist and hand were involved and showed a similar appearance. Aspirin was administered, but with no relief. The temperature registered an evening rise of 100 to 101.2°, the morning register being 99°. The pain and discomfort which were first noted in both feet returned, and coincidentally the right and left knee joints became involved.

The knees presented a typical fusiform enlargement, with periarticular infiltration, and extreme sensitiveness to pres-

sure and motion. There was a slight amount of fluid in the joint cavity. The inguinal lymphatic glands were enlarged but not tender on palpation. Immobilizing plaster of Paris splints were applied with the leg completely extended. The elbows were next involved in the same manner and showed the same characteristic swelling, with limitation of motion and marked sensitiveness to pressure and passive motion.

The radiographs† taken of the wrists, hands and both feet showed no cartilaginous or bony structural change, but a

†I am indebted to Dr. S. B. Childs for the excellent skiagrams which he has taken of both of these cases.

definite periarticular swelling about the joints.

Following the recommendation of Nathan of New York, who first advised the use of thymus gland in these cases of chronic polyarthritis, the dried extract of thymus gland was given daily in doses of five grains, three times a day. Symp of iodide of iron in doses of from 10 to 15 minims was administered, combined with cod liver oil in dram doses, after each meal.

Complete rest in bed during the acute and subacute stages was insisted upon, and the painful joints were kept at rest in immobilizing apparatus. At the end of five months the patient showed definite signs of improvement. The pain in the joints had disappeared with the exception of the left elbow, which still was painful on motion and in a flexed position. The temperature reached normal and has remained so, and the general condition has greatly improved. She is now walking about without apparatus, she has gained in weight, her appetite is good, and she sleeps well.

The blood examination[§] made by Dr. Ross C. Whitman gave a result quite different from that shown in the first case described. The red blood cells numbered 5,680,000, the white blood cells were 6,000, and the haemoglobin was 90%, the color index being .818. The differential count made of 200 cells showed a decided diminution of the polymorphonuclear leucocytes and a marked increase in the small lymphocytes. The complete count is here given: polymorphonuclears 31.5%, small lymphocytes 55%, large lymphocytes 7½%, basophiles 0%, eosinophiles 0%, transitional forms 2½%, large mononuclears 1%, mast cells 2½%.

A blood culture was taken during the acute stage and showed a diplococcus or-

ganism. The Von Pirquet cutaneous test was negative.

The accompanying photographs, taken on September 1, 1914, show the typical joint affections met with in this disease.

At the time of reporting this case the child is walking about without the use of crutches or apparatus, and with the exception of the persistent pain in the left elbow and wrist, with the resulting flexion deformity of these joints, there is no pain in the articulations which had previously been involved.

In conclusion the writer wishes to emphasize the more salient features of the disease of which these two reported cases are typical examples.

First, that Still's disease is probably not of tuberculous origin, and that we are not warranted at the present time in assuming that the multiple joint involvement is due to the presence of tuberculous toxins, although such careful observers as Edsall⁶, Lavenson⁷ and Monriquand⁸ are



Fig. 11. Reproduction of a photograph of one of Dr. George F. Still's cases of the disease which bears his name.

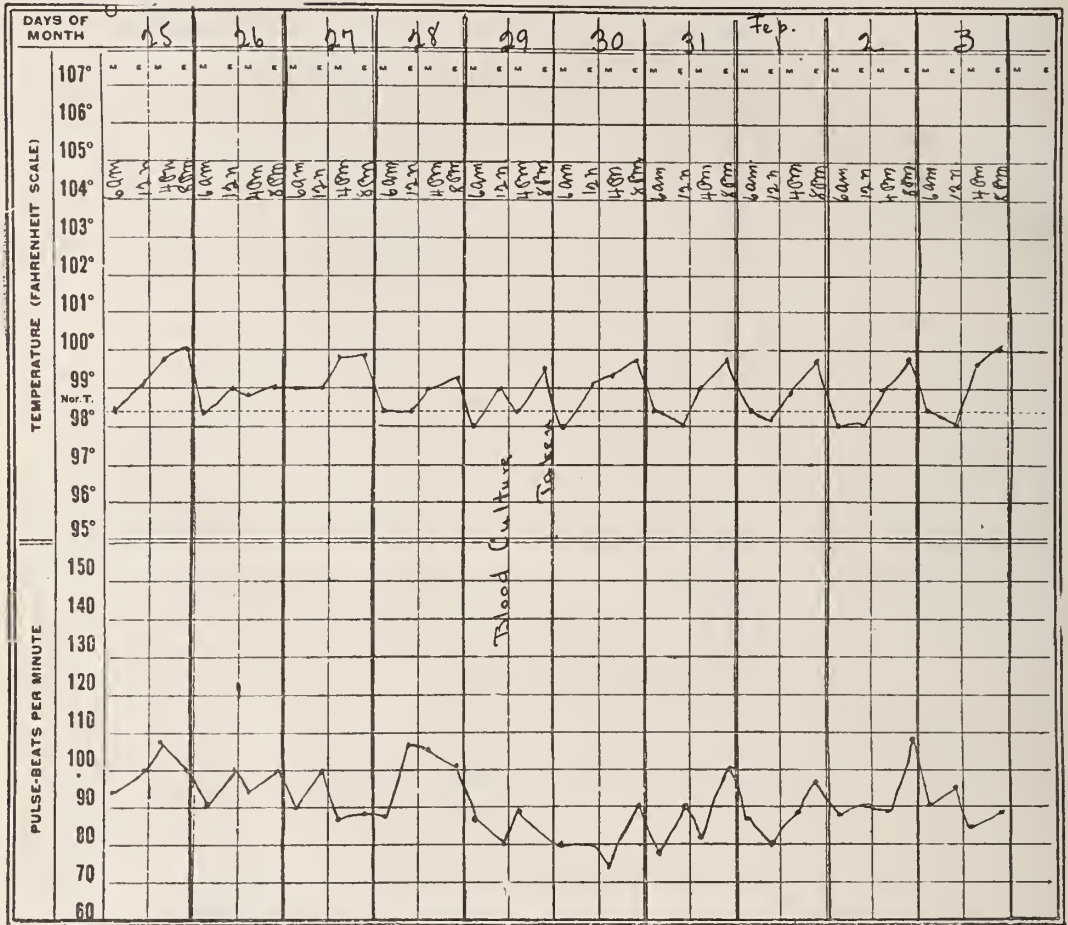
[§]Blood examination of July, 1914.

CLINICAL CHART

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The temperature chart of Case 2, recorded during the most acute stage of the disease, showing the irregular temperature curve and the increased pulse rate.

inclined to this theory; that these cases of polyarthritis in children are very probably of an infectious character, closely resembling rheumatoid arthritis, but differing in their morbid and clinical manifestations, and that the bacteriological findings are still obscure and need more careful and thorough laboratory research.

Second, that the glandular involvement is characteristic of the disease, but that the splenic and liver enlargement may or may not be present.

Third, that the prognosis is more favorable than at first regarded by Still; that

many cases, as the two above reported, have shown decided improvement; and that in rare instances complete recovery has taken place.

Fourth, that complete rest and immobilization of the affected joints is imperative during the acute and painful stage of the disease. Proper hygienic surroundings, fresh air, good and nutritious food and the use of tonics, such as iron, arsenic, cod liver oil, maltine, etc., are essential.

Fifth, that the extract of thymus gland in suitable cases and in proper dosage

seems to have a decided and beneficial effect.

Sixth, that the resulting contractions and deformities require surgical interference and should be corrected and overcome during the quiescent stage.

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DISCUSSION.

David P. Mayhew, Colorado Springs: Still's disease may be but a form of chronic rheumatoid arthritis, but whether or not that is a fact, it has most of the earmarks of being an infectious disease, as Dr. Jones has carefully pointed out. In one of his cases at least he made a blood examination and the diplococcus was found. The vaccine was tried without benefit. In considering this case from the standpoint taken by Billings and Hektoen in connection with the treatment of rheumatism, it would seem a proper course in these cases would be along the line of some vaccine. There are practical difficulties to be met with in these cases from the fact that cultures of various organisms can be found and made from normal tissues. So even if in these cases we get an organism there is no way of telling for sure whether it is the offending organism or one of those which grow in normal tissues. The only way to determine that would be by the pragmatic method of trying and seeing whether it worked. Medicines of all sorts, with the exception of the general up-building of the health of the patient, we expect to have no particular effect. The use of thymus gland must, of course, rest upon a purely empirical basis. The physiology of the thymus is not clearly understood. Very little work has been done on it and we have very little idea as to what its rôle is in the bodily organism. There again, if it works, we have recourse to our pragmatic philosophy.

The fact that these two children were negative to the Von Pirquet skin reaction opens up interesting questions. One child was five years of age. He should normally run one

chance in two of already having tuberculosis. The other one was thirteen years of age, and he ran practically ninety per cent. of chances of being infected with tuberculosis, yet both showed nothing of this sort. Have we here one of those peculiar conditions which inhibit the Von Pirquet skin test, as we find in certain conditions, not only of tuberculosis but some exanthemata. Until a greater number have been subjected to the test, we cannot absolutely rule out the factor of tuberculous infection. However, the general picture is not that of tuberculous infection, and probably it is not of that nature. These cases, although rare, are interesting, and we are all indebted to Dr. Jones for bringing them to our attention.

J. D. Gibson, Denver: I am very much surprised to hear nothing said in this paper about the subject from the standpoint of the electro-therapist, for this is one of the conditions where electro-therapy is very useful. If electro-therapy is used in the early stages, none of these cases will get into the extreme condition that we have just seen. In rheumatoid arthritis there is nothing I know of that gives these cases the freedom and relief that electro-therapeutic measures do. In the first place, when an X-ray picture of the joints does not show bony ankylosis or complete destruction of the cartilages, they can be made comparatively useful joints by the use of electricity. In the acute stages immobilization is all right, but with very high frequency current, or what is known as the American current with the static machine, you can relieve these cases in ten minutes in the acute stage. In the sub-acute stage the frictional spark produces almost instantaneous relief. In the more chronic condition, nothing is better than the heavy eight or ten inch static spark drawn from the nodules. Snow of New York has done more work along this line than any one I know of, and it is wonderful what results he gets. Another point that Snow brings out in these cases is as regards the diet. In Still's disease, which is a form of rheumatoid arthritis, a richly nitrogenous diet is insisted on by Snow. He forces a meat diet instead of a low grade diet.

George B. Packard, Denver: As Dr. Jones has said, the cause of this disease is obscure, yet from the glandular involvement it would naturally be considered an infectious disease.

There is one point that always impresses me in these cases, particularly in the cases that occur before second dentition, and that is an arrest of bodily development. This is quite noticeable, and gives a very peculiar appearance to the child. I saw some of the cases of rheumatoid arthritis which were exhibited by Dr. Nathan before the national association, in which he had used the thymus gland treatment referred to by Dr. Jones. In quite a number of cases he got the most remarkable results, these being largely cases of Still's disease. I have seen one or two cases which yielded fairly well to the treatment mentioned. If there is a lack of development and possibly a disturbed metabolism, those are the cases where this treatment is most likely indicated.

The prognosis is not so gloomy as was first indicated by Still.

Frank P. Gengenbach, Denver: I am interested more particularly from the standpoint of differential diagnosis in these cases of chronic arthritis. Independently of the cases due to the ordinary pyogenic organisms, the cases due to gonorrhea, syphilis, tuberculosis, rheumatism and rickets, there are still three so-called types of rheumatoid arthritis: the first type in which chronic arthritis is associated with predominant hypertrophic changes; the second type of chronic arthritis with predominant atrophic changes; and third, the type of so-called Still's disease in which there is at the beginning hypertrophy or increased vascularization of the synovial membranes, the capsules of the joints, and later in advanced cases atrophic changes. These cases, as Dr. Jones has pointed out, are usually associated with enlargement of the spleen and the lymphatic glands, more particularly the glands. Of course, they would naturally be involved, depending upon the joints implicated. In cases involving the knee and ankle we get enlargement of the inguinal glands. There is usually also some anemia and some leucocytosis, although the blood count in the second case does not show it. I had the pleasure of examining case No. 2, and at the present time it lacks those accompanying symptoms. There are no glandular enlargements and the spleen at the present time is not palpable.

Just a word as to the treatment. In these days, when we are looking for portals of infection, we ought to look into the throat, inspect the tonsils, examine the teeth for a possible pyorrhea, and also examine the intestinal tract for possible intestinal auto-intoxication.

In these days we are all interested in the internal secretions and the glandular extracts, and in addition to the thymus gland, it has been suggested that pituitary extract be used in these cases.

Ross C. Whitman, Denver: There is a growing tendency to believe that very many of these chronic joint affections are not toxic but are infectious. During last winter I had some four or five cases of joint troubles, but not all identical with those reported by Dr. Jones by any means. I have not done any exhaustive work with the organism, but it seems to be identical in every case, viz., a diplococcus which grows fairly rapidly and luxuriantly on blood serum, but dies out quickly so that it is difficult to do anything with it. It seems to be identical with the micrococcus of rheumatism which is found in rheumatic fever. I disagree with Dr. Gengenbach's classification of joint diseases into atrophic and hypertrophic, et cetera. These are distinctions which are based on clinical experience, and have little or no significance from the standpoint of true etiology or pathology.

S. Fosdick Jones (closing): There is just one point that I should like to emphasize, which has been brought out by Dr. Mayhew, and that is that the use of the extract of thymus gland is purely empirical, just as the use of the pituitary extract in these chronic

joint conditions is empirical. It must be borne in mind that these drugs are not free from danger and should be used with caution and in selected cases.

CHRONIC INTESTINAL INDIGESTION IN CHILDREN; ITS ROLE IN THE PRODUCTION OF EPILEPSY.*

J. W. AMESSE, M.D., DENVER.

Whatever one's attitude may be toward this, the strangest of all human affections; whether one's observations lead him to conclude that epilepsy is a disease sui generis, or merely a morbid condition characterized by abnormal hyperfunction of some portion of the cerebral cortex, all freely admit that our knowledge of its essential nature has not progressed far beyond the brief notation of Hippocrates, who first accurately described the well-known paroxysms.

With as many definitions as there are writers; with one authority contending that every form of epilepsy, and indeed every case of the disorder, is dependent upon some definite lesion, gross or histological, in the brain or its membranes, while another argues quite as strongly on a functional hypothesis; with heredity condemned one day and exonerated the next, well may the practitioner, in whatever field, be tempted to reject existing theories and await with patience the time when fortuitous circumstance and medical genius shall give us the key to "the most variable, protean and uncertain disease of mankind."

For those of us who are still open to conviction, however, it is a source of gratification to note that the distinction between the so-called idiopathic, primary or genuine epilepsy and the secondary or symptomatic variety is giving way before improved diagnostic methods. The pro-

*Read at the annual meeting of the Colorado State Medical Society, September 9, 10 and 11, 1914.

portion of primary cases, especially among children, is not so great as formerly believed, and the cases reported as idiopathic are daily becoming fewer. A changing attitude on the part of the public toward the privilege of post-mortem examination will enable us to reduce this number, it is believed, still further.

In tracing the history of the falling sickness, it is more than suggestive to find that while various peripheral irritations and actual organic lesions have usually been ascribed as potential etiological factors in the production of its characteristic seizures, all authorities agree that gross disturbances of digestion may, and frequently do, play an important rôle in the origin or the perpetuation of the paroxysms. So firmly was this idea promulgated by early writers that the terms "*Morbus mensalis*" and "*Morbus convivialis*"—in other words the disease of feasting, were used synonymously with epilepsy.

Leaving aside then the organic basis produced by such factors as cranial compression or cerebral hemorrhage at birth, meningitis, subpial gliosis and the diffuse scleroses, and eliminating from the present discussion certain reflex agencies originating in the eye, the ear, the nasopharynx and the genitals, we find confronting us the problem of intestinal toxemias and their influence on the central nervous system. Excluding syphilis, most of the lesions found originate in early life or may arise even before birth. Likewise, practically all of the peripheral irritations are active in the young, and the toxins arising from perverted or hyper-activity of the ductless glands, as the pituitary or the parathyroids, are especially formidable at this period.

Epilepsy, then, may justly be regarded as a disorder of childhood. Gowers found that more than twenty-five per cent. of cases began under ten years of age, and nearly fifty per cent. under twenty.

Spratling's statistics show eighty-two per cent. under twenty. Aside from the birth accidents mentioned, it is easy to understand how irritants may overwhelm the unstable organization of a child and produce unwonted explosions of nerve force. The vital centers are here so impressionable that responses, in susceptible subjects, may be prompt and positive. This instability of the central nervous processes is well shown in the frequency of convulsive disorders in childhood, and especially in children suffering with rachitis. The relation, however, of infantile convulsions to genuine epilepsy in later life is regarded as very remote. In considering this tendency to spasmophilia, Soltmann remarks: "The irritability of the peripheral nerves is already quite considerable, perhaps even greater than in the adult, while, conversely, the mechanism of inhibition and the volitional faculties (the psychomotor cortical centers), although they have begun to develop, are by no means sufficiently powerful or sufficiently definite in their action to offer an efficient bar to the ready transmission of stimuli."

If, in addition to this naturally unstable equilibrium, we have to cope with an inherited defect of the central nervous system, the menace to health and life is still further increased. The influence of toxins of gastro-intestinal origin in the causation of epilepsy, though recognized for centuries, has probably been underestimated. Whether these toxins are elaborated by bacteria, or whether they arise as the result of decomposition of the intestinal contents, it would be difficult to determine. Probably a more potent factor is the occurrence of subinfections of the intestinal canal, following a condition of chronic stasis, with the absorption of poisons entirely unforeseen. The exaltation of virulence in the common bacteria of the bowel, such as those of the colon

group, must be considered in these cases, as well as the possibility of mutations in bacterial forms hitherto deemed incompatible with our knowledge of germ life.

To the specific toxins thus arising, we must add the various deleterious products, such as the diamins, acetone, ammonia and carbamic acid, commonly found in victims of chronic constipation, and which are doubtless responsible, in part, for the depression, headache, vertigo and fatigue suffered by these patients. We may assume, also, that it is not entirely necessary for the poisons evolved to act directly on the brain cells in order to elicit convulsive seizures. Their effect on the viscerai nerves may be profound enough to induce reflex paroxysms, choreiform or epileptiform in character, as noted in infection with the dwarf tapeworm, for example.

Where, in cases of long standing, the nutrition of the cerebral elements is also affected, the susceptibility to convulsive attacks is correspondingly increased.

Turning now to chronic intestinal indigestion in children, we find authorities of distinction—Holt, Hamill, Blackfan, Powers, and many others—asserting that nervous symptoms are constant phenomena of this condition; that there is no limit to their manifestations; and that “the convulsive seizures occurring in this condition are frequently, if neglected, the beginning point of what later develops into so-called epilepsy—the patient’s resistance constantly lowered until finally the toxin produces those regular fits we term epileptic.”

Holt states that intestinal putrefaction, associated with chronic constipation and chronic intestinal indigestion, forms one of the most important etiological factors in arousing epileptic paroxysms. In general, disorders of digestion have been shown to be more concerned with the nervous instability of children than com-

monly supposed. The identification of chronic intestinal indigestion is readily accomplished. The child, usually between three and ten years of age, suffers not only from a disordered nervous mechanism but presents symptoms involving the circulatory system, including irregularity of the pulse, cold feet, pallor and syncope. The abdomen is usually distended, the urine always contains indican, and often acetone and diacetic acid; the stools are characteristic, either hard and dry or pasty, of excessively foul odor and containing food elements such as starch granules, vegetable cells, undigested muscle fibers and fat globules.

On inquiry, it will usually be found that the hygiene of the home is poor; that the child is fed too frequently, perhaps, and that improper foods are permitted, such as an excess of starches or ripe fruits. Imperfect cooking, eating between meals, overeating, and bolting the food are all factors. Debility following summer diarrhea, diseased tonsils, carious teeth and adenoids are further contributing agents in the production of intestinal intoxication.

The management of these cases, therefore, involves the most rigid survey of domestic and personal hygiene, while preventive measures among those unaffected should appeal to physicians and parents alike. The fallacy that children of the runabout age require no special direction in diet, and may be depended upon to choose, at table, foods best suitable for their nutrition and growth, is responsible to a large degree for the unhappy percentage of frail, anemic pupils crowding our schools. As a matter of fact, the care and feeding of a child of five may call for a higher type of intelligence, and certainly for greater firmness and patience, than is required for an infant in arms. Pediatricists will continue to plead for broader instruction in dietetics so long as

its importance is undervalued by the general practitioner and the public.

In the treatment of individual cases, whether the toxemia is or is not associated with major disturbances of the nervous system, isolation of the child, preferably in a hospital, is most desirable. Where, as will obtain in the great majority of cases, this separation from the home is not feasible, the absolute cooperation of mother and nurse is indispensable. The hygienic management will not only embrace a proper dietary, but full instructions, in writing, must be furnished regarding hours of sleep, the character and amount of exercise, periods of rest, baths, fresh air and suitable clothing.

In my experience these children are usually heavy milk drinkers, the balance of their ration consisting largely of starch, in the form of potato, bread, rice, etc. The distension of the abdomen from the flatulence invariably set up by this diet is apparent on first examination. As the flora of the intestine is intimately associated with the disquieting symptoms soon aroused, the quickest and most effective method of nullifying its activity is to change the food from a carbohydrate to a proteid ration, depending on albumin milk, fermented milk or buttermilk for a beverage only.

Experience has shown that a salt-poor diet is of advantage. Plenty of water should be insisted upon, but the pernicious practice of drinking large quantities at meal time forbidden.

Medicinally, the judicious use of laxatives and the exhibition of some bitter tonic, such as *nux vomica*, will ordinarily supplement sufficiently the dietetic and hygienic management. If the nervous system becomes undermined and recurrent attacks of epilepsy complicate the case, bromides should be interdicted and a search made for every possible source of irritation, the common ones being dis-

eased tonsils, adenoid growths or phimosis.

The sole object of this paper, in fact, is to plead for a broader outlook in these cases, where proper elimination and proper feeding may save a child from permanent invalidism.

The histories of two cases of intestinal intoxication accompanied by epileptic attacks are given herewith:

Case 1.

G. C., male, age 12, seen July 1, 1913; eldest of several children; father, mother, brothers and sisters are in good health and have always been free from nervous or mental disorders. The patient's personal history shows him to have been well and strong in infancy. He had all of the minor diseases of childhood, none of which left sequelae. Several months ago nocturnal fits developed and the boy was treated immediately with large doses of the bromides. On discontinuing the drug, the seizures recurred. There seems to be no question concerning the character of these paroxysms: they occurred during sleep and consisted of clonic and tonic convulsions lasting from ten minutes to half an hour, with involuntary discharge of urine, and a comatose state succeeding. The following morning he would complain of headache and dizziness and the tongue was usually found to have been bitten.

The fits were increasing in number and violence: the bromides produced nausea and caused an annoying eruption of acne. He was quite unfit for school work. Careful inquiry elicited the fact that for years this boy had been a rapid and heavy eater; he suffered from obstinate constipation and persistent flatulence.

Examination: A slender boy, sallow, anemic, protuberant abdomen, circulation poor, breath foul, tongue coated, tonsils diseased, a mouth breather, general acne eruption, sight and hearing normal. Chest negative, mentality normal for age. With

the intelligent assistance of the mother, the patient was placed on a proper hygienic regime; the tonsils and adenoids were removed by Dr. L. B. Lockard; suitable laxatives and a strychnine tonic were the only medicinal remedies used. His progress was most gratifying. The epileptic fits rapidly diminished, until, during six months past, he has had but one. He has gained over ten pounds in weight, the skin is clear, his color normal and there is every assurance that he will entirely outgrow the disorder which seemingly had so secure a foothold a year ago.

Case 2.

H. P., age 5; only child; family history negative. The patient was a full term baby, weight nine pounds, breast fed for 13 months; has had indigestion with convulsions since infancy. These seizures occur usually at night and are increasing in number so that during one period of twenty-four hours, in March, 1914, there were six epileptic paroxysms. The child bolts his food, finishes his meal often almost before the rest of the family have begun, and then runs out to more or less violent play. Examination of the patient reveals no external source of irritation. He is a bright, active, healthy-looking boy. The stools however are full of undigested food undergoing fermentation, and the odor extraordinarily offensive.

The treatment consisted in thorough catharsis, a properly selected diet, and an injunction to consume at least half an hour at each meal. The boy was taught to chew his food, and after each meal he rested for an hour. During the past two months he has had no return of the seizures and seems entirely relieved of the intestinal intoxication.

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DISCUSSION.

Herbert B. Whitney, Denver: I have been very much impressed by the paper of Dr. Amessee. I think he has given us valuable sugges-

tions of which I shall avail myself. I regret, however, that I have been selected, without my knowledge, to open the discussion on this paper; I do not suppose there is anything I know less about than epilepsy. It has been my fortune to meet with very little epilepsy, and as I look back upon those cases of infantile gastrointestinal disturbances and those associated with more advanced childhood, I cannot recall a single one which has been productive of or eventuated in epilepsy. Therefore I am hardly ready to believe that the solution of the problem of epilepsy is to be reached in disorders of the gastrointestinal tract, although I am willing to admit the association of certain forms with intestinal disturbances.

I congratulate Dr. Amessee particularly upon the results of dietetic treatment in these cases. They are certainly remarkable, and do not correspond with anything I myself have observed.

As far as the diet in the second period of childhood is concerned, I must say that my own tendencies are exceedingly liberal, although it is essential that the diet of children be very carefully supervised. I note that we are all of us influenced very largely by our own history, and I have always been blessed with a perfect digestion. I have always had a good deal of sympathy with the remark of old Austin Flint, who, when asked whether apple pie was a good food, said, "I do not know, my friend; try it and see." In other words, any food which agrees with you personally is a good food for you; and there is a great deal of philosophy in that remark as far as eating is concerned.

It is certainly true, as the essayist has said, that where there is chronic indigestion along about the age of 6 or 8 or 10 years, we have a difficult problem before us so far as treatment is concerned, and that these cases demand a more accurate knowledge of dietetic principles in the treatment of dyspepsia than in infancy itself. I am accustomed in these cases to put a child on an exclusively milk diet at first, and then gradually go on to the so-called anti-fermentative diet, which comprises in my own list chiefly meats, eggs, oysters, spinach, lettuce and asparagus, toast and zwieback, also clear soups, such as bouillons, consommés, etc. In this treatment it is necessary to have the full cooperation of the mother or nurse, and when this is had the children generally improve remarkably. In addition to this dietetic treatment, such hygienic measures as the doctor has spoken of are of great value.

J. A. Elack, Pueblo: I was very much interested in the doctor's paper, and while I do not treat many cases of the disease in children, at the same time I think he has opened up a field which is of great importance. I have nothing particular to say regarding the diet except by way of illustration. I believe that the health and growth of a child depend very largely upon the diet. I have in my mind two children who were both nearly the same age. They were born of parents of the same character and moved in the same class of society. One was a boy and the other a girl. One child was breast-fed, it grew and developed

into a beautiful baby. The other child when born was puny, a straggling little thing, so much so that for the first three months you would not believe the child could live. His mother followed strictly the instructions for a bottle-fed baby. After two or three months the child began to grow rapidly, and after old enough to go on a full diet, besides milk, his mother followed strictly the diet laid down for him. That child is now five years of age and has never had a day's sickness in its life.

The other child was breast-fed, but was later allowed to eat indiscriminately, including all kinds of candy and cake, and the result was that in a few months the child had serious gastrointestinal trouble. Following that, after a few months or years, the child had an attack of rheumatism, and at the present time it is bordering on chorea, largely as the result of the diet. As I have said, the child has been allowed to eat sugars and the richest kind of candy and the richest kind of food. It has had little or no attention paid to its diet. I could not impress upon the mother the necessity of restricting the diet.

This is certainly a field that needs to be given more attention. There should be more education of the mother on the part of the physician.

Frank P. Gengenbach, Denver: I rise to speak of the only case in my own practice that I can remember in which you might say that chronic intestinal indigestion was a possible factor in the causation of epilepsy.

The patient was a girl who, at the age of puberty, had some sort of convulsive attacks. Unfortunately I never saw her in an attack and I had to depend upon a description of the case. She would have these attacks mostly in school. She was a very frail child, thin, had grown rapidly, was of marked nervous temperament and was a tremendously large eater. I knew the family personally. In fact, I had a number of opportunities of seeing the child eat, because at certain intervals they would come to our house and we went to their house. The child ate one and a half times as much as you would expect a child of her age to eat. It is said she would stand up from her seat in school and apparently in stepping out into the aisle would fall over and have a certain amount of twitching, but her face would be pallid rather than congested. She was at the age of puberty, had not menstruated at the time, and I thought possibly it was just a reflex disturbance, and the so-called convulsive seizure was more in the nature of a fainting spell rather than an actual convulsion. However, she had several of them a few weeks apart, and so I finally sent her to Dr. H. T. Pershing for an opinion. He went into her history and into a description of the attacks. He decided that the child had beginning epilepsy and recommended that she be put on bromides, and as her blood pressure was rather low she was to be given some digitalis, and as she was anemic she was to be given iron and nux vomica. He also suggested a curtailment of the diet, and attention to the processes of elimination. As a result, the child had no attacks for over a year, and then

an attack was brought on as a result of an excessively indulgent meal, and also from the fact that in the meantime she started to eat candy, this happening just before one of her periods. That is the last attack the girl has had, and it is now about three years ago. I question whether these were actual convulsions, and whether the child actually had epilepsy.

H. G. Wetherill, Denver: When an intern in the New Jersey State Lunatic Asylum at Trenton, I investigated the peripheral irritations which might give rise to epilepsy. I found we had in that institution thirty-three male epileptics of varying ages. I made a careful study of the relationship of the epilepsy in these thirty-three males to phimosis. I found that many of them needed circumcision, and we circumcised them, the younger ones particularly, and the favorable effect upon the epilepsy for the first few months was very marked indeed. There can be no question, I believe, that peripheral irritations, such as accompany phimosis and intestinal irritations from indigestion and improper foods, have a definite causative effect in producing these conditions. Of course, the permanent cures were not large in number, because after epilepsy is once established the abatement of the peripheral irritation does not always do away with the epilepsy, but the immediate result in many cases and among the younger children or boys was very marked indeed.

J. W. Amess, Denver, (closing): The reason I selected this topic for discussion was an incident that occurred in connection with the physical care of pupils in the department set aside for backward children at the Corona school in Denver.

It appeared that a boy, eight years of age, child of poor parents, and living in very unsanitary surroundings, was asked to dine at a certain home near the school, with one of the children in another grade. Probably for the first time in his life he had an opportunity to indulge the appetite to its limits, and he ate as only these children of the alleys can. There was a base ball game in progress near the house and after this hearty meal he entered eagerly into the sport. Within five minutes he fell in a typical epileptic fit, the first, so far as we know, that he had ever experienced. His mother was advised of the occurrence and cautioned regarding his susceptibility to these seizures. His feeding was supervised from then on, the bowel function was regulated, and, so far as we have learned there has been no recurrence of his epilepsy.

There is a group of neurologists who believe that we are all potential epileptics. They argue that it depends only upon the amount of shock necessary to overthrow one's nervous equilibrium. Some children will promptly react to irritants. A fall or a blow may be sufficient. Others can withstand severe lesions without apparent damage to the nervous system. I think the case quoted by Dr. Gengenbach suffered a form of this disease known as "silent epilepsy."

CONTAGIOUS DISEASES IN DENVER DURING 1913.

C. E. LOW,
CHIEF CLERK, DENVER HEALTH DE-
PARTMENT.

The United States Public Health Service has recently published a bulletin on the prevalence of contagious diseases in the larger cities of the United States, which gives some interesting comparisons. Generally speaking, Denver compares very favorably with other cities of its class, both as to case and mortality rates.

In the bulletin mentioned, Denver is given an estimated population of 237,885 by the Census Bureau and is classed with the following cities: Indianapolis, Jersey City, Kansas City, Louisville, Providence, Rochester, St. Paul and Seattle.

In measles Denver has the lowest fatality rate of any city in the country, with .40 per 100 cases. We feel that this low rate is due to the fact that in 1913 the Department of Health inaugurated the placarding and quarantining of measles in conjunction with the other so-called minor contagious diseases. This brought a great many cases to our attention which otherwise would never have been reported. Thus in 1912 there were but 72 cases reported, which with one death gives a case mortality of 1.38. In 1913, 746 cases were reported, which with three deaths gives a case mortality of .40 per cent.

Without a doubt the mortality rate for Denver in all contagious diseases could be reduced to such an extent that our city would stand at the head of all others, if only physicians could be sufficiently impressed with the importance of reporting promptly all cases of contagion. The department feels fairly certain that scarlet fever, diphtheria and smallpox are reported whenever such cases are attended by a physician, but it feels equally certain that only a portion of the minor contagious

diseases are reported. This fact naturally gives Denver a higher fatality rate than it should have.

In diphtheria three cities in Denver's class had fewer cases, but our fatality rate—4.10 per cent—is the lowest. While we hesitate to take full credit for this low fatality rate, nevertheless we do feel that it is due to some extent to our zeal in securing cultures of every sore throat, however mild, and not waiting until the patient shows marked clinical symptoms. We are constantly urging physicians, parents and teachers to have cultures made of every sore throat and always advise the administration of antitoxin as a prophylactic to persons exposed. In 1913 Denver had 415 cases of diphtheria and 17 deaths.

There were but two cases of epidemic cerebrospinal meningitis reported to the department in 1913. In this disease again we do not feel that a complete report was secured.

In scarlet fever both our case rate per 1,000 inhabitants and the fatality rate per 100 cases exceed those of any other city in our class. In extenuation of this we feel that some explanation is necessary. During 1913 there were two epidemics of scarlet fever. The first occurred about May and resulted in the closing of the Berkeley school. The epidemic was due to the fact that a number of light cases of scarlet fever were improperly diagnosed as German measles.

The second epidemic broke out about October in the Jewish settlement, and on account of the fact that the residents of that district do not seem to realize the importance of observing quarantine, the epidemic was not checked until a large number of cases had developed. In many of these cases in the Jewish quarter the patients did not and could not under the existing conditions there, receive proper care and attention, and a number of fatalities resulted. During the year 878 cases

were reported, and there were 51 deaths, giving a case mortality of 5.81 per cent and a case rate of 3.69 per 1,000 inhabitants.

What Denver needs, and needs badly, is an ordinance providing for compulsory vaccination for smallpox. The good resulting from compulsory vaccination is best shown by a comparison of our city with New York. The latter with its more than 5,000,000 inhabitants is over twenty times the size of Denver, and yet in 1913 it had only 20 cases of smallpox to our 100 cases. Philadelphia with 1,600,000 inhabitants had 19 cases, Pittsburg with 557,000 had 2 cases, and in fact every city with compulsory vaccination laws has a minimum number of cases. On the other hand, cities without these laws show results like the following: Detroit, 539 cases; Milwaukee, 454 cases; Salt Lake, 592 cases, and Spokane, 368 cases. To the first of November this year 129 cases of smallpox have been reported.

Denver has no record of which to be proud in the number of its typhoid fever cases and we have no apologies to make. We do not believe it is necessary for this department to apologize for the ignorance or neglect of people who refuse to avail themselves of an immunotoxin when it is offered to them free of charge by the Department of Health. There need not be one single case of typhoid fever in Denver if the people will accept our offer to administer antityphoid vaccine free. Last year we had 201 cases and 30 deaths—a fatality rate of 14.43. This year our record will probably not be better, as 121 cases had been reported to November 1st.

Mosquito Breeding in Roof Gutters.—New York citizens having complained that the lakes in Central Park were breeding too many mosquitos, investigation showed that the offending mosquitos had been raised in obstructed roof gutters belonging to the persons complaining.

INOCULATION AGAINST TYPHOID FEVER IN THE NATIONAL GUARD OF COLORADO.*

W. A. JOLLEY, M.D., BOULDER.

The entire National Guard of Colorado was ordered into active service October 26, 1913. The sanitary troops consisted of the following officers: Colonel G. P. Lingenfelter, Surgeon-General; Major P. P. Lester, commanding the Walsenberg district; Major W. A. Jolley, commanding the Trinidad district and in charge of the base hospital, which was the San Rafael at Trinidad; Captains G. E. Orsborne, E. W. Lazell, L. H. Schultz, T. H. Hopkins, O. D. Wescott, E. G. Edwards, H. M. Peck, and H. S. Finney; and Lieutenants W. C. Lucas and S. J. Lamme.

The enlisted men of the hospital corps were from different detachments as follows: Boulder detachment 13, Denver 11, La Junta 7, Ramah 24; total 55. A medical officer and two or more hospital corps men were stationed with the detached organizations. Several officers and men were relieved from duty and returned to their homes as the force of the men in the field was reduced.

The use of typhoid vaccine in the Guard had been optional for three years, and nearly 500 men had been given the treatment. Inoculation was made compulsory as soon as the troops were ordered out.

Nine hundred and thirty-six men reported for duty at once, many others reported at later periods and some of the men were relieved for various reasons during the first few weeks in the field. Recruiting was begun at once to take the place of the men who returned home and also to fill out the various organizations. The largest number in the field at one time was 1,472. This, however, does not

*Read at the annual meeting of the Colorado State Medical Society, September 9, 10, and 11, 1914.

represent the true number of men given the first inoculation, for many who returned home had received one or more inoculations. We also, as I stated before, had many men who had been vaccinated prior to entering the field.

The work of inoculating for the prevention of typhoid fever began as soon as we could get the vaccine and was pushed as rapidly as conditions would allow. We soon found that it interfered with the usual military work, for the force was not large enough to cover the field as is done in the regular army. We had no reserves and every man was needed. We discovered that, so far as military service was concerned, the inoculation incapacitated practically the entire number for twenty-four hours. The detachments were often shifted from one station to another. Records were forwarded with them, but the demand for men was so great that I am afraid that many of the company commanders did not enforce the attendance of the men as they should. Our records then are not so exact as will be found in the regular army, but that the work was done in a thorough manner is evident from the results.

The work was done in the afternoon and the men were relieved from duty for twenty-four hours and kept in quarters. The routine was as follows: 1. A hospital corps man took the names as each man entered the tent. 2. A hospital corps man raised the left sleeve and painted the arm with tincture of iodine over the site of inoculation. 3. A hospital corps man assisted the surgeon in handling the vaccine and outfit. 4. We kept a basin of boiling water on a small alcohol stove; we cleansed the syringe and needle by several times drawing this boiling water into the syringe and ejecting it. 5. The needle was then thrust through the rubber cover over the neck of the bottle and the syringe filled. The rubber was kept covered with

tincture of iodine. 6. The needle was then thrust subcutaneously at the insertion of the deltoid. We could easily handle one man a minute. We used the small glass syringe furnished by Cutter.

I find that our results do not compare with the published reports, which minimize the effects of the inoculation. In private work the physician sends his man home and does not see him until the next inoculation unless the reaction is very severe. We were in continual contact with the men, many of whom seized upon the slightest pretext to escape duty. We had many arms that were indurated and sore for several days, but did not have any abscesses form. Every evening we found many of the men sick: nausea and vomiting were common, rigors were frequent, malaise, backache and headache general. We know that we had many malingersers, but we found that most of the men were really not fit for military duty.

Colorado has many cases of arrested tuberculosis in all walks of life, and so we had some in the Guard. We found the reactions severe in these men, requiring a few days in bed, but producing no permanent disturbance.

We kept no comparative records as to the reactions from the first, second, and third inoculations, but we noticed that there was a great difference among the men: some suffered from all, some from the first, and some from the first and second inoculations.

We noticed one effect that caused some anxiety among the men, the loss of the usual nocturnal priapism. This was only temporary, judging from the number of cases of gonorrhea that developed later.

Conclusions: The Secretary of the State Board of Health reports 433 cases of typhoid fever in the State of Colorado at the time the Guard was called into the field, and 86 cases in Las Animas and

Huerfano counties with 7 deaths during our stay in that district. We were in close contact with the residents of those communities, drank of the same water, and ate of the same food.

We had about 1,800 men in the field at different times and we had one mild case; this man was given the first inoculation on Monday and was taken sick on Friday.

The population of the district is about 25,000. Thus the rate per thousand would be about 3 cases. It is fair to state that under the conditions which prevailed the reported cases did not cover all the cases that actually existed.

THE VALUE OF ORGANIZATION IN THE MEDICAL PROFESSION.*

ISAIAH KNOTT, M.D.
MONTROSE.

Recent investigation has revealed the fact that from 30 to 40 per cent of physicians in the different states have never joined county or state medical societies. This naturally leads one to ask the question, why? In some of the sparsely settled districts, where the individual members would have to travel long distances over rough roads in order to meet in sufficient numbers to conduct a meeting, inconvenience alone may answer the question. In some of the cities and thickly populated country districts the same excuse does not seem a valid one. Is it then on account of some known or suspected ungentlemanly or unprofessional conduct on the part of these physicians that they cannot gain admittance? Or is it from sheer indifference to the advancement of the medical profession? A good medical society is made up of quality rather than quantity in membership, but the majority of physicians should be sufficiently progressive in their ideas to see

the advantages that come to bodies of medical men associated for a common purpose, namely, that of advancement.

Medical education has improved in recent years to such a degree that it has raised the intellectual grade of medical men enormously. The physicians who are not active in society work and medical progress are never leaders in their profession. The active, inquiring medical society physician, you may dub him, he is the man whose opinion is most eagerly sought after and whose skill is most earnestly desired. This being true, why do so many medical men remain outside of medical societies?

There are many reasons why every right-thinking physician should join a medical society. The man who decides on a medical career and who becomes a graduate in medicine, becomes at once a servant of the people, to be used and abused, and petted by a few.

His spare time must be given to reading medical books and journals and to the discussion of clinical cases, and nowhere can the latter be accomplished so well as at the regular meeting of the medical society. His skill is his capital, or stock, that he expects to sell. If he finds employment he must compete mentally with his brother physicians.

Our ministerial brothers have grown wise more rapidly than we of the medical profession. Only a few years ago it was common for the preacher of one denomination to abuse his brother pastor of a different. But they have grown wiser and now we see the ministers meeting in the closest intimacy, exchanging pulpits, etc., and never hear an intelligent minister make an unkind remark about a brother pastor of any other denomination. This is as it should be, for—

"There is so much good in the worst of us
And so much bad in the best of us,
That it does not behoove any of us
To talk about the rest of us."

*Read at a meeting of physicians of the western slope, held in Delta, Colo., June 25, 1914.

There should be the same spirit of harmony in our great profession.

The physician who causes trouble and instigates a malpractice suit against his brother physician is only raising a club over his own head, for "curses like chickens come home to roost," and the devilment he works up will poison the minds of some of his own patients against himself sooner or later.

It is one of the business maxims of business men to get together, to compare notes and to obtain new ideas from their associates and competitors. The same plan applies with equal force to bodies of physicians, but from a different viewpoint, and why should it not apply with greater force when we remember that "the health of a nation is the wealth of a nation" and that on the medical profession more than any other organization we place the responsibility of sanitation and health.

Some of our most valuable lessons are learned from the experiences of brother physicians, as related and discussed in the medical society. The great good comes from getting together and knowing our fellow practitioners, not of our own town only, but of our county and state; and strange as it may seem, you will like certain men much better after a friendly chat or friendly but closely argued discussion of some interesting paper. And after the relaxation of a good meeting you will actually find yourself whistling as you go home, and feel more kindly to the whole world and your own professional brethren in particular than ever before.

The man who stands aloof or who considers himself superior in ideas or attainments to his fellow workers is standing on a shaky foundation, which will some day fail to support him in an emergency. As Wm. Mayo recently said, "His clock has already struck twelve." The man

who stays away from the medical society and from association with medical men on the pretence that he is too busy, is robbing his patients of one of the important things which it is his duty to give, viz., the medical knowledge and experience which can be gained only by frequent intercourse with his fellow practitioners.

In order to render skilled service he must be ever ready to profit by the experiences of others. His work is to preserve the health or life of his patients. If he joins a medical society where he comes in contact with progressive thinkers and workers, he is stimulated to keep abreast with his associates. He reads recent medical literature, he hears reports on and discussions of obscure clinical cases, and he learns in various ways how to work to best advantage, how to lessen his anxieties and how to discard the obsolete and unsafe for modern and safe methods of treatment. In no profession has advancement been so great as in the medical, and this advancement is due to a great extent to organization and society work. Incidentally, the physician learns the business side of his profession, or he may instruct or help others in the same way.

I am well aware of the fact that a great many physicians who become members of medical societies are not so well able as others to prepare and read papers or to take active part in the discussion of medical topics. This to a certain extent is a gift. But it is a gift that can be cultivated, and in no place will better opportunity to cultivate this gift be found than at the medical society before a group of brother physicians. The code of ethics becomes a broad and helpful aid to him when he sees it applied to a body of men in contact with the wide world. It gives him higher ideals and teaches him tolerance for the faults of lay and medical men.

The real physician learns that there are

higher ideals in the practice of medicine than the few dollars and cents derived therefrom. To be able to rightly instruct our patients in the laws of hygiene and sanitation, to be able to prevent rather than cure disease, is certainly the highest ideal to which the physician can attain.

It is largely the work of the organized medical profession that has brought about the sanitary condition of our cities, has limited the spread and lessened the severity of epidemics of contagious and infectious diseases and has raised the standard of our drugs and food products.

I have thus briefly tried to show why every intelligent physician should be a member of his county and state organization, first for the benefits he will receive, secondly for the good he can do to others in the advancement of his chosen profession.

Keller Building, Montrose.

CLOSURE OF VESICO-VAGINAL FISTULA WHICH HAD FOLLOWED HYSTERECTOMY.

C. M. STEWART, M.D.
GLENWOOD SPRINGS.

The patient was 50 years of age and the mother of four children, the oldest 27 and youngest 19 years. In February of this year she was operated upon at San Diego for what was thought to be a carcinoma of the uterus. Hysterectomy was done, and at that time the urinary bladder was punctured, the result being a vesico-vaginal fistula. Two unsuccessful efforts were afterward made to close the vesico-vaginal opening. On the patient's return to Glenwood Springs she called at my office, where an examination was made, and on June 22nd she was admitted to the Glenwood Springs Sanitarium. The urine was highly alkaline, but normal in other respects. It was rendered acid by copious drinks of cream of tartar lemonade and

potass. acetate gr. 15 every four hours. The bladder was frequently irrigated with 4 per cent boric acid solution, and the vagina douched with a solution consisting of potassium iodid gm. 1, iodine gm. 3 and water 1,000 cc.

On the morning of June 25th, under ether, and with the patient in the Sims position, the bladder was thoroughly irrigated with boric acid solution, followed by normal salt solution. The vagina was douched with the same solutions, and a self-retained speculum introduced into the vagina. The anterior wall of the vagina was then seized with volsella forceps and the field of operation brought well down into view and reach. The vesico-vaginal opening being large enough, a glass catheter was introduced into the bladder and allowed to pass on through the opening into the vagina, where it served as a guide. After picking up the margins of the fistula with appropriate forceps denudation was begun by making an incision with a knife through the vaginal mucous membrane on either side of the fistula and extending the incision well anterior and posterior to the opening. This done the vaginal mucous membrane was dissected well around the opening and the denudation continued through the bladder wall to, but not through, the vesical mucous membrane. Extensive cicatricial tissue, the result of previous operations, had to be removed. This done the bladder and vagina were again irrigated to remove any blood clots that might have formed, and sutures were introduced in the bladder wall. Continuous linen suturing was adopted, introduced well away from the wound margins ($\frac{1}{4}$ inch) and carried through the muscular coats down to, but not through, the vesical mucous membrane. In this manner the bladder opening was closed snugly, but avoiding any tension on the sutures. The vaginal mucous membrane was then brought over

and snugly closed with interrupted sutures of fine silkworm gut. The vagina was again cleansed and was packed with 5 per cent iodoform gauze, and a soft rubber catheter was retained in the bladder.

AFTER TREATMENT.

Water was given from the start. Urotropine gr. 5 and potassium acetate gr. 20 were given three times a day. Cream of tartar lemonade made with the juice of two lemons, cream of tartar dr. 2, hot water one pint, and sugar to suit, was given freely to keep the urine acid. Each morning the vaginal packing and the retention catheter were removed, and the bladder irrigated with boric acid solution, after which a clean catheter was introduced. This daily treatment was continued for two weeks, after which the vaginal sutures were removed and the catheter permanently withdrawn. After the vaginal sutures were removed the vaginal wound was treated with Peruvian balsam and loosely packed with iodoform gauze for one week longer. On the permanent removal of the retention catheter the patient voided urine without any assistance and at frequent intervals. At no time did she have any symptoms of cystitis, nor was she troubled with vesical tenesmus. This is the 22nd day after operation, and one has to look a second time to see the scar.

PROBLEMS OF THE TEACHING DISPENSARY.*

BY JOSEPH SHAPIRO, M.D.
BOULDER, COLO.

The College Dispensary of the University of Colorado, in Denver, offers medical service to the worthy poor and sick, but perhaps its greatest field of usefulness is the imparting of clinical knowledge to the student. It was with the aim of investigat-

ing the results accomplished in both fields—treatment of patients and instruction of students—that this work was undertaken. The plan of the work was to study the dispensary records of a number of cases, visit the homes of the patients and learn the results of treatment.

The findings are given with as much objectiveness as possible, although in discussing the teaching done at the dispensary, personal impressions are reflected. No definite classification of cases is possible. Various factors and causes operate together and it is hard to separate them. For instance, there are cases that only visited the dispensary once; many of these are certainly neglected cases. But it is difficult to tell whether the negligence is entirely the fault of the patient or whether it is a result of insufficient attention being given to the case.

Brief particulars of some of the single-visit cases are given:

A. McB., three years old, came to the Pediatrics department. Examination recorded swollen cervical glands as the most prominent feature. No definite diagnosis or treatment. On visiting the patient, mother informed me patient had developed mild scarlet fever and recovered. The child had a bad case of pyorrhea alveolaris. The family occupied two little rooms in a rooming house.

S. B. Neurology department. Chief complaint: bed-wetting. Fowler's solution administered. On visiting mother, I was told that the bottle was labeled "poison," and for this reason she only gave the child one or two doses.

M. C. Asthma. Prescribed KI. Patient took first dose, felt worse, and discontinued taking it. Uses whiskey and hot water to relieve cough every two or three hours.

S. L. Neurology department. Nervous spells. Did not improve after taking the medicine prescribed. The first diagnosis was heart trouble, but when asked to come

*Abbreviated from thesis for degree Doctor of Medicine, University of Colorado, 1914.

to the school again, diagnosis was changed to "vasomotor disturbance."

M. C. Ear department. Luetic deafness. Was advised to use inunctions. When seen at home, patient's husband informed me the treatment was not followed up.

To the second class belong those cases where an incomplete or false diagnosis was made or wrong treatment given:

M. H. Pulmonary trouble. Diagnosis not definitely tuberculosis. Autogenous vaccine. Advised rest and hygiene. Patient was living in a rooming house. It was slightly windy the day I called, the windows were closed, patient sitting up gasping for breath. She subsequently developed cyanosis and edema, and died. Her last visit to the dispensary was three weeks before death.

M. H. No definite diagnosis. When seen patient said she had heart trouble. Chronic cough for the last twelve years. Does laundry work at home, lives in two small uncomfortable rooms. Was prescribed a medicine but could not afford to buy it.

V. B. Diagnosis bronchitis. Treatment expectorant. When seen at home, mother complained child was constantly constipated. On inquiring, it was found that child had no appetite, and drank cocoa only, about seven cups a day.

P. C. Laborer, out of work. Is supported by his children. Diagnosis in Medical department, heart disease. Was given some medicine, but did not care to take because it was too strong. Patient complained of pain in chest, of dyspnea on exertion.

E. B. Thirteen years old. Came to Pediatrics department. Mother's complaint, child does not eat much and feels generally weak. Examination showed poor development and general nervous excitement was noticed. I. Q. and S. was prescribed. When seen at home, mother was found to be af-

feeted with tuberculosis, and the child did not seem to have improved.

F. R. One year old. Examination negative—so it reads on history blank. I was told by the mother that the child died a few weeks after the visit to the dispensary. Several doctors of this city diagnosed the case as a hopeless one.

J. G. Nine months old. Mother, a Russian, complained child's bowels were irregular. Corrective tablets were given and mother was asked to come back again. Several weeks later the mother appeared at another department. Her child had died several days ago.

Third class—where home conditions were entirely antagonistic to the aims of the physician:

H. S. Nine months old. Complaint: can't nurse, irregular bowels. Treatment: corrective tablets. Mother deserted. Child one of twins. Deficiency in food supply. Child vomits, coughs and has herpes. The case was found to be supported by the charities.

E. G. Occupation, newspaper boy. Has weak feet. Strapping done, ordered off feet. Was seen in the streets, selling papers, the next week. Says he has to do it to help support a family.

F. Z. Child complained of pain in chest and headache. Parents lived in one of the poorest districts in the city. Father affected with tuberculosis. Child looks anemic, is backward in his studies.

S. C. Came to Medical department to be relieved of cough. An expectorant was prescribed. When seen at his place of business, he had a cadaveric look. Was working in a second-hand store, atmosphere was very dusty, he coughed constantly. He thought the medicine obtained in dispensary too strong and did not use it.

M. F. Diagnosis, Phlyctenular keratitis. Mercurial applications. Patient was advised to have good nourishment and spend a great deal of time outdoors. The neigh-

borhood where the patient lived was very dusty and he worked at an occupation which kept him confined indoors.

E. G. Ear Department. Came for treatment twice. Patient a widow, came to Colorado with her son to better his health. Was very much worried about a discharge in his right ear. She was reluctant in bringing the son to Dispensary, as the doctors are always inquisitive about the financial condition of the patient and they make her feel very uneasy.

R. E. T. Patient complained of pains in the chest and expectorant was prescribed. Patient was living in a rooming house in worst district of city. Several days after dispensary visit he had hemorrhage and was taken to County Hospital.

F. S. Diagnosis: Lues. Was treated by salvarsan injections twice. Patient thought she wasn't treated well by students and she is now treated by a private doctor who promised to relieve her for a very small amount.

One case among many illustrating the investigation of financial condition of patients carried on at school:

Mrs. W. came to throat department with her little girl. Complaint, sore throat. Diagnosis, enlarged tonsils. Advised removal. When mother came next time to make arrangements for the operation, she was told by the surgeon that on investigation he found her financially able to consult a private physician. The husband, a barber, owns the house he lives in, but must pay taxes and keep house in repair out of limited income he earns as a barber.

The following case illustrates the need for care in giving a gloomy prognosis:

B. D. came to throat department, hoarseness, no pain. Surgeon found slight congestion of the larynx. Patient was anxious to know whether his case was tuberculosis, and was answered in the affirmative. Patient, who was then at a sanitarium, was much worried about his throat condition

after the doctor's diagnosis. As a matter of fact the patient went on improving, and recovered his voice. The diagnosis was doubtful and it is questionable whether the patient should have been given a positive answer.

In conclusion, the observations suggest that cases with acute minor derangements are well attended to. But the dispensary cases are mostly chronic. The patients are only seen for a short time, the conditions of the case are not fully learned and naturally the results are not always laudable. Much of the failing is to be ascribed to the class of patients treated at the dispensary, but with realization of the situation, and having in mind the improvement of the patients' health and incidentally the reputation of the dispensary, some improvements should be made.

Regarding opportunities for the student to learn there is even greater room for improvement.

For instance, in the Medical department, the staff men seem often unaware of the importance of their task. Cases are often examined and considered hastily, and diagnosis made at random.

A diagnosis of hypochlorhydria was made on the basis that a patient who had pulmonary tuberculosis felt uncomfortable after meals. A diagnosis of hyperchlorhydria (with corresponding laboratory findings) was made where patient had all the other symptoms of ulcer. Alkalies were prescribed, but patient did not seem to improve. She is still complaining of pain and is still treated with magnesia and Carlsbad salts. Corrective tablets are given to a child that is in a desperate condition; I. Q. and S. to another child, where only heroic measures are likely to build up his body.

The student is apt to copy faulty as well as correct methods of handling patients. There is valuable material at the clinic, but it is often used improperly. My impres-

sion is that symptoms are frequently put down as the complete diagnosis. I feel that relatively the students learn more from the "dry" cases presented to them once a week by a competent man, than from the live material they see every day for two months. At the County Hospital a clinic is held for one and one-half hours on one patient; and the student goes away feeling satisfied with the discussion of the case.

The dispensary ought not to be a place for the doctor only to obtain experience, but for him to impart some of his wider experience to the student. The dispensary physician, considered in the abstract, should be a capable pedagogue and able to demonstrate a case so that not only the manifesting symptom, but also the hidden cause, shall stand out conspicuously. "Quick work" cannot bring the lesson home.

The specialties departments are too crowded. In almost all departments no attempt is made to appeal to the hidden forces in the human machine. A hopeful, encouraging talk may do wonders with certain patients, whose life is never too bright.

I have dwelt most upon the cases that gave negative results, due to such factors as social conditions, the unreliability of the patient, and inadequate medical attention. Naturally, the student is made indirectly to bear the consequences. Either he does not learn all he could, or he learns some things that are of disadvantage to him. As he is not familiar with all the conditions relating to the case, it seems that a visit to the home of the patient would offer a chance to study the case from various standpoints, and bring patient and doctor into closer relationship. Some of the conditions are irremediable at the present time, but along certain lines great improvement could be made. A change in the attitude of the dispensary staff towards the patient is desirable for both patient and student.

News Notes

There appear good reasons to believe that the present European war is causing a vigorous awakening of the medical educationists of the United States to the opportunity now afforded for wresting from the European clinics some of the prestige which they have hitherto held, more or less to the disadvantage, and certainly to the discredit, of our own medical institutions. The new announcement of the Graduate School of Medicine of Harvard University offers instruction in a great variety of subjects on a very thorough basis, and with very liberal accommodations as to just how much or how little work may be taken by the individual. We are told that "the advantages for graduate medical instruction which Harvard University is able to offer through its Graduate School of Medicine are unsurpassed in this country." Let us hope that it will soon be correct to say that they are unsurpassed in any country.

Of like happy portent is the announcement that the neurological staff of the Philadelphia General Hospital, with the approval and encouragement of the Director of the Department of Public Health and Charities, has organized a Post-Graduate School of Neurology. "The time," says the printed announcement, "is opportune for this step. Owing to the terrible war in Europe, it will probably be one or two years at least before American students can avail themselves of the neurological clinics and laboratories of London, Paris, Vienna, Berlin, Rome, and other centers of medical instruction abroad." The first course of lectures will begin Monday, December 7, 1914.

We wonder how much part in the defeat of Dr. Work for U. S. Senator was played by such ebullitions as the following, which is culled from the columns of our world-renowned contemporary, the Englewood Tribune: "If you wish to retain the God-given and constitutionally guaranteed right to employ the practitioner of your choice when you are sick, don't vote for Dr. Work or any other political doctor for the United States Senate or any other executive or legislative position, state or national. Therefore, vote for Senator Charles S. Thomas and defeat the medicine trust." That is to say, vote for such as "Dr." Sanders, chiropractic physician, who sends out printed circulars claiming to cure cancer, tuberculosis, and diphtheria by manipulations; who was Progressive candidate for another position; and who was described by a certain junior, non-partisan political organization as a woman of "high ideals."

Colorado Springs health officers were recently authorized to take stringent measures to put down the epidemic of rabies prevalent among the dogs of the city.

The El Paso County Medical Society recently appeared by committee before the Colorado Springs City Council to urge the establishment of a fund for the construction of a municipal hospital for contagious diseases, for

the treatment of which the accommodations are at present very limited.

Dr. Alfred Moore of Brighton rather startled the Denver County Medical Society by telling it on October 20th that he had treated seventy-seven cases of child-birth by means of the much discussed "twilight sleep."

Dr. Newton A. Bolles, proprietor of a "drug cure" institution, was recently haled before the police magistrate and fined \$50 on each of seven counts for the illegal sale of drugs to habitual users. His mode of cure was stated to be to sell cocaine or morphine to the drug victim on the latter's promising to gradually reduce the amount taken daily.

During Hallowe'en festivities at Fort Collins, Drs. McHugh, Kickland, Hoel, Sadler, Norton and others are said to have been given rides in a wheelbarrow by ten nurses attired to suit the occasion; the Mecca of each pilgrimage being the candy counter of the local drug store.

On October 15th Dr. R. C. Whitman read before the Denver Medical History Club a paper entitled "An Historical and Critical Contribution on the Theory of Inflammation."

The Annals of Surgery for October contains a paper by Drs. S. F. Jones and R. C. Whitman on "Primary Sarcoma of the Lower End of the Femur Involving the Synovial Membrane."

Dr. Edward Jackson was lately given the honorary degree of Doctor of Science by the Union College, Schenectady, New York, from which he graduated with the degree of A. M. in engineering nearly forty years ago.

The American Journal of Medical Sciences for October contains an article by Dr. J. N. Hall on Relative Pulmonic Insufficiency.

Dr. Bane returned November 1st from a trip to Pittsburg.

Dr. Frank Dunklee, late of Fairplay, Colorado, has taken offices at 564 Metropolitan Building.

Dr. E. Eckerson has been making a rapid recovery from his recent severe illness.

Dr. George F. Roehrig traveled east recently with the body of his sister, the widow of the late Dr. John S. Miller of Philadelphia.

Dr. C. G. McEachern was recently quite ill with symptoms which were referred by his physicians to a duodenal ulcer.

Dr. Stanley Eichberg's marriage to Miss Leona, the daughter of Dr. Robert Levy, is announced for the 1st of December next.

Dr. Charles R. McLean, formerly interne at St. Anthony's Hospital, and now one of the leading practitioners of Honolulu, sends word of the arrival of a baby boy called George.

Dr. J. D. Gibson read a paper on the Treatment of Tuberculosis by the X-ray before the recent meeting of the American Electrotherapeutic Association at Battle Creek, Michigan, and on his way back addressed the County Medical Society of Ottumwa, Iowa, on the X-ray in Medicine.

Dr. Taylor of Grand Junction and Dr. Little of Cañon City did some visiting in Denver about the middle of October.

Dr. Carroll E. Edson read a paper on the

Life of Ambroise Paré before the Boulder County Medical Society on November 5th.

Dr. Edward Jackson read a paper on Retinal Angiosclerosis and Associated Lesions at the ninth annual meeting of the Medical Association of the Southwest, held at Galveston on November 10th and 11th, 1914.

Dr. H. P. Brandenburg, of Green River, Wyoming, spent a few days in Denver at the beginning of November.

Dr. J. H. Larson has left Palisade to locate in Wray.

Dr. H. S. Bussey has moved from San Miguel to Dolores.

Dr. Asa Hall has located in Lafayette.

Dr. E. A. Fetherston of Fort Morgan has disposed of his practice and residence to Dr. H. W. Aldridge, of New York City.

Dr. F. A. McNeill has returned to Rico to practice.

Dr. H. M. Bennett, formerly of Cheyenne and Denver, has recently settled in Boulder.

Dr. J. B. Clymer, of Berthoud, has located at Platteville.

Dr. Charles R. Woolwine has taken over the offices, equipment, and practice of Dr. E. F. Eldridge of Grand Junction.

Dr. R. W. Earll, formerly a practitioner in Wisconsin and Ohio, died October 25th, aged 91 years, at the home of his daughter, Mrs. A. E. Reynolds.

Dr. A. E. Greene of La Salle was seriously injured when on November 1st his automobile turned turtle.

Dr. Elizabeth Newcomer recently spent some time in Boulder, and called on a few old friends in Denver.

While in Chicago recently, Dr. W. W. Grant by invitation addressed Dr. Murphy's clinic at the Mercy Hospital.

Dr. and Mrs. Arthur McGugan are back from a several months' stay in England.

The following have been elected as the officers of the Denver Medical Club for the ensuing year: President, Dr. F. C. Buchtel; first vice president, Dr. C. C. Perkins; second vice president, Dr. Harry Shafer; secretary, Dr. A. C. Craig (re-elected); treasurer, D. C. C. Bell (re-elected).

Pueblo Items.

Dr. W. W. Bulette, who was called to Philadelphia several weeks ago on account of the serious illness of his mother, has returned to his practice.

Dr. W. L. Droland, who has been seriously ill for several months, is now able to be at his office part of the time.

In the recent political campaign Dr. Ray O. Taylor, Republican candidate for coroner, was elected over his Democratic opponent, Dr. W. O. Patterson.

Dr. F. E. Wallace was elected as state representative from this district.

As we go to press it appears certain that Dr. Hubert Work failed of election by some 2,000 votes. Dr. Work has been taking a philosophical view of the matter, remarking, "If I am, I am; if I ain't, I ain't."

**MEDICAL SOCIETY OF THE CITY AND
COUNTY OF DENVER.**

Library, 266 Metropolitan Bldg., Denver, Colo.

LIST OF PERIODICALS ON FILE.

- Albany Medical Annals.
 Alienist and Neurologist.
 American Journal of Diseases of Children.
 American Journal of the Medical Sciences.
 American Journal of Obstetrics.
 American Journal of Orthopedic Surgery.
 American Journal of Public Health.
 American Journal of Surgery.
 American Journal of Tropical Diseases.
 American Journal of Urology.
 American Medical Association—Bulletin.
 American Medicine.
 Anales de Oftalmologia.
 Annales de l'Institut Pasteur.
 Annals of Ophthalmology.
 Annals of Otolaryngology and Rhinology.
 Annals of Surgery.
 Archives de Médecine des Enfants.
 Archives of Diagnosis.
 Archives of Internal Medicine.
 Archives of Pediatrics.
 Archiv für Experimentelle Pathologie und Therapie.
 Archives of Ophthalmology.
 Archiv für Geschichte der Medizin.
 Archiv für Gynaekologie.
 Archiv für klinische Chirurgie.
 Atlanta Journal-Record of Medicine.
 Archiv für Verdauungskrankheiten.
 Arizona Medical Journal.
 Arkansas Medical Society, Journal of.
 Beiträge zur klinischen Chirurgie.
 Beiträge zur Klinik der Tuberkulose.
 Berliner klinische Wochenschrift.
 Biochemical Journal.
 Boston Medical and Surgical Journal.
 Brain.
 British Journal of Children's Diseases.
 British Journal of Dermatology.
 British Journal of Surgery.
 British Medical Journal.
 Buffalo Medical Journal.
 Bulletin of the American Academy of Medicine.
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Constituent Societies

BOULDER COUNTY MEDICAL SOCIETY.

The Boulder County Medical Society met at the Commercial Association rooms, Thursday evening, October 15, 1914. Nine members were present.

Dr. H. A. Greene spoke on the eight recent cases of bubonic plague in New Orleans. He emphasized the fact that this disease may be seen in Colorado should infected patients come here. Dr. Greene spoke of having seen the disease in South Africa, and said that in Cape Town people fell dead in the streets with the plague. By proper isolation spread of the disease was prevented. All the depots were fumigated. The onset of the plague was very sudden; it was often suddenly fatal. The incubation period is from three to eight days, but it may be fifteen days. Vaccination is used as a preventative, especially for nurses. The city of Cape Town spent \$1,000,000 to clean the city and destroy the rats. Recently in New Orleans 1,000 rats were found to be infected. Fleas carry infection from rat to rat and to human beings. Adenitis is the first symptom, later developing into bubos. The temperature is high, the face is drawn and shows fear as well as suffering. Kitasato discovered the organism which causes the disease. The plague has ravaged Russia even in the winter and has almost decimated London.

Dr. O. M. Gilbert presented for discussion a series of abstracts of articles on pituitary extract in pneumonia, the etiology of arthritis deformans, manipulation in lumbago, sublingual medication and the Babinski sign in functional diseases. (These will be published in Colorado Medicine as occasion offers.)

F. R. SPENCER, Secretary.

The Boulder County Medical Society met at the Hotel Boulderado Thursday evening, November 5. Dr. C. E. Edson of Denver was the guest of the society at a dinner at the Boulderado at 6 p. m.

The meeting was called to order by Dr. C. Gillaspie, president.

The paper of the evening was by Dr. C. E. Edson of Denver on "The Life of Paré." The society gave a vote of thanks to Dr. Edson for his excellent paper.

The following physicians were elected to membership in the Boulder County Medical Society: Drs. J. M. Shapiro, Fred G. Swartz, Tom Walker and G. C. Cary.

The secretary was instructed to write a letter of thanks to Mr. W. L. Beattie for his offer to entertain Drs. Noguchi and Wilson during the recent state meeting.

Dr. G. H. Cattermole spoke briefly of the needs of the American Red Cross Society in Europe and especially of the need in Belgium.

Dr. Jolley spoke of the need for clothing and food in Belgium, and said the people didn't need money and couldn't buy the things they needed if they had money.

Dr. L. M. Giffin spoke of the indifference in the U. S. A. about the suffering in Europe. Dr. Giffin urged us to wake up and give all the assistance we could.

Dr. C. E. Edson spoke of the suffering in Belgium and of the need there. Dr. Edson had given money to the Belgian vice consul in Denver, and it was badly needed and greatly appreciated.

Dr. Gilbert emphasized that we little realize what it means to read that 40,000 have been killed. The women and children are the ones who suffer most. We in this country so rarely know what hardship means. Conditions there in time of peace are so much worse than here.

Dr. O. M. Gilbert moved that a committee consisting of Dr. Jolley, chairman, and Drs. Cattermole and Queal be appointed as the Red Cross Committee of the Boulder County Medical Society. Seconded by Dr. L. M. Giffin. Discussed by Drs. L. M. Giffin, G. H. Cattermole, F. R. Spencer, C. E. Giffin, E. B. Queal and O. M. Gilbert. The motion carried.

Drs. G. H. Cattermole and E. B. Queal reported a case of scarlet fever and asked the physicians to be on the alert for other cases, as this is the only one they know of in Boulder.

F. R. SPENCER, Secretary.

OTERO COUNTY MEDICAL SOCIETY.

A regular meeting of the Otero County Medical Society was held October 13th and 14th in the City Hall of La Junta.

The meeting was called to order by the President, Dr. R. M. Pollock of Rocky Ford. Roll call showed the following members present: Drs. Pollock of Rocky Ford, Kearns, Johnston, Edwards, A. L. Stubbs, Jessie Stubbs, Brunk and Moore of La Junta.

Dr. Jas. F. Kearns read a paper entitled, "With Whom Shall We Consult?"

The paper emphasized some points in the code of medical ethics relative to the duty of physicians when asked to consult with or recognize irregulars, such as osteopaths or chiropractors. It showed that physicians could not in any way recognize or consult with these irregulars without lowering themselves and bringing injury and disgrace to the cause of medicine and surgery.

At the close of the discussion the following resolution was carried unanimously: That no member of the Otero Medical Society can consult with or assist any irregular practitioner, such as osteopaths, chiropractors, and the like, in treating any case, and retain membership in this society.

The society adjourned to meet at the regular time at the Santa Fé Hospital, La Junta, Colo.

R. M. POLLOCK, President.
W. M. MOORE, Secretary.

Glyco-Heroin, Smith.—A report of the Council on Pharmacy and Chemistry declares that Glyco-Heroin, Smith, although containing 1-16 grain heroin to the teaspoonful, is exploited in a way to encourage self-drugging by the layman. The advertising matter suggests its administration to children.

Book Reviews

Anesthesia; by James Tayloe Gwathmey, M.D., First President of American Association of Anesthetists, Anesthetist to the New York Skin and Cancer, etc., Hospitals, etc., etc., in Collaboration with Charles Baskerville, Ph.D., F.C.S., Professor of Chemistry in the College of the City of New York, etc., etc. New York and London: D. Appleton & Co. 1914.

There has been recently added to the Denver medical library a notable work on anesthesia by Jas. T. Gwathmey, an expert anesthetist of New York City. This volume consists of 945 pages and is an exhaustive treatise on the entire subject of anesthetics and analgesics and their administration. It is written in collaboration with Prof. Chas. Baskerville, a noted chemist, and there are special chapters contributed by ten well-known authors. It is by far the best one volume text book which has appeared on this important branch of surgery. The book treats of every conceivable point relative to anesthesia, and gives minute details of the theory and practice of surgical narcosis. One important and useful feature is the frequent tabulation of the bibliography. Of interest is Chapter XX, comprising 153 pages, which gives a list of anesthetics, including general and local anesthetics, and anesthetic mixtures both past and present, with synonyms. There are 283 illustrations, many of which are valuable in explaining the text. The printing and general makeup of the book by the publishers is excellent. An exhaustive treatise of this kind will be welcomed by the profession, and especially the anesthetic specialist, as it will make for better and safer administration of anesthetics. C. G. P.

The Clinics of John B. Murphy, M.D., at Mercy Hospital, Chicago. Volume III, Number IV. Octavo of 254 pages, 65 illustrations. Philadelphia and London: W. B. Saunders Company, 1914. Published bi-monthly. Price, per year: Paper, \$8; cloth, \$12.

The publication of the clinical lectures and talks of Dr. John B. Murphy has proved to be a strikingly useful innovation in medicoliterary enterprise. The great Chicago surgeon possesses the faculty of using graphic, picturesque English of fairly colloquial yet sufficiently polished style. By the more or less verbatim reports of remarks made in the presence of the patient (sometimes by the patient or bystanders), either during examination or at operation, the reader obtains a vivid sense of reality which is rarely to be had in a formal paper. The illustrations accompanying the lectures are well designed to visualize still further the essential features dealt with in the text. The present number of the clinics reports a series of demonstrations as to arthroplasty of the hip; ascending root neuritis after amputation of the cauda equina close to the conus; malignant cyst of the breast; paralytic ileus; united Colles' fracture; congenital left facial

nerve paralysis; carcinoma of the rectum, and several other subjects.

A Manual of Biological Therapeutics; Sera, Bacterins, Phylacogens, Tuberculins, Glandular Extracts, Toxins, Cultures, Antigens, etc. Press of Parke, Davis & Co., Detroit, Mich.

This neatly bound and well-printed volume of 174 pages is of course issued primarily to advertise the products of the publishers. It contains, however, in a compact form, a great deal of useful information on serologic subjects. There are a good number of very handsomely reproduced illustrations, including especially bacteriologic smears and colored representations of some of the skin reactions.

The Question of Alcohol. By Edward Huntington Williams, M.D.; author of "The Walled City," etc. New York, The Goodhue Company. 1914. Price, bound in cloth, 75c; in flexible leather, \$1.25.

This diminutive volume is one of a series, uniform in size and binding, published by the Goodhue Company, under the general title of the "Personal Question Series." Of the five chapters into which the book is divided, three, on the drug habit menace, liquor legislation and insanity, and the liquor question in medicine, are reproduced from the Medical Record. A chapter on temperance instruction in the public schools and its results is printed from the Survey. The author is disposed rather to control the saloon than to abolish it.

Practical Bandaging, Including Adhesive and Plaster of Paris Dressings. By Eldridge L. Eliason, A.B., M.D., Assistant Instructor in Surgery in the University of Pennsylvania Medical School; Assistant Surgeon University of Pennsylvania Hospital, etc. 155 Original Drawings and Photographs. Philadelphia and London, J. B. Lippincott Company.

This volume of 124 pages is perhaps best recommended by reference to its 155 illustrations, which are admirably adapted to convey the clearest possible idea of the various steps in applying the different bandages. Many of the illustrations are directly photographic, others are drawn from photographs. The text is concise and to the point, and it seems probable that anyone of intelligence could acquire, from the mere study of this book, and without any personal instruction, an excellent knowledge of the too frequently neglected art of bandaging and dressing.

In a paper on Industrial Insurance, J. W. Schereschewsky (U. S. Public Health Reports, reprint No. 197), urges that the basic principle of industrial insurance is prevention of sickness, and that if this were carried out in a methodical and scientific manner there would be less sickness, fewer disabilities, and therefore less expense to this form of insurance. Furthermore, this principle would create a standard for minimum hygienic conditions in various industries, and would greatly enhance the efficiency of local health authorities.

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4mo.	7 lb.	15	18	2	2	10
4mo.	5 lb.	9	15	2	3	10
5mo.	6 lb.	12	11	2	3	10
5mo.	7 lb.	15	18	3	3	10
6mo.	8 lb.	18	25	3	3	10
6mo.	7 lb.	15	22	3	4	10
6mo.	9 lb.	18	25	2	4	10
7mo.	8 lb.	21	22	3	4	10
7mo.	9 lb.	18	20	3	5	10
7mo.	10 lb.	24	21	3	5	8
8mo.	10 lb.	24	21	3	5	8
8mo.	11 lb.	24	24	3	7	8
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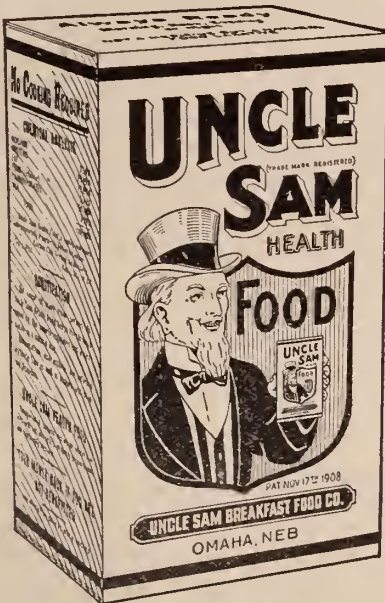
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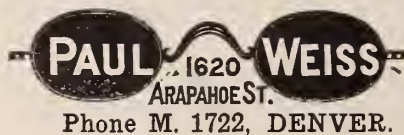
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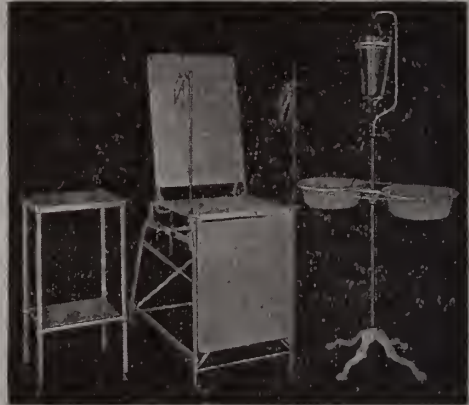
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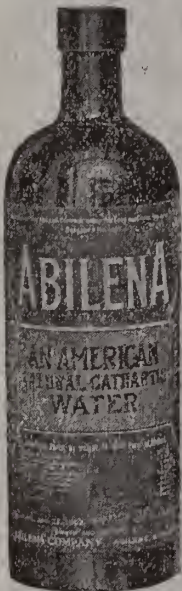
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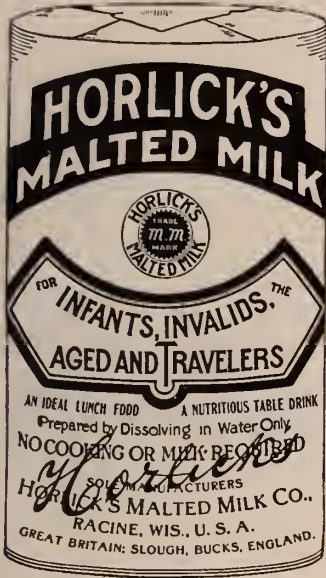
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Editorial Comment

CLINICAL OPPORTUNITIES IN DENVER.

On the first of the current month there went into effect a formal agreement between the officials of the City and County of Denver and the Medical School of the University of Colorado; by which the latter secured the appointment of the Medical Staff of the Denver County Hospital for nine months of the year (the teaching period) and the preparation of the rules controlling the medical service and teaching in that institution.

This constitutes a distinct advance in the arrangements for clinical teaching in Denver. It comes as the culmination of a gradual development of co-operation between the Board controlling the Hospital, and the Medical School. While but few changes are made in the personnel of the medical staff, this unification of management will promote harmony and efficiency.

The hospital staff has already been working in this direction, and under the new conditions will be encouraged and assisted to go forward. Both the Medical School and the Hospital Staff earnestly desire to make this hospital, of more than

four hundred beds, one of the best teaching hospitals in the country. The medical profession of Colorado may take satisfaction in this advance. The daily clinics at the County Hospital have for years been one of the chief clinical opportunities for medical students in Denver. For more than a year ward walks have been given in this hospital; so that the senior student spends the greater part of each morning and, with the college dispensary clinics and clinical laboratory, more than half of each day in the actual examination and study of patients. Mayor Perkins and Drs. Williams and Wescott of the Hospital Board, and President Farland and his associates of the State University Medical School, while furthering the interests of the institutions committed to their care, have thus done a real service to the people of Colorado in promoting the better care of hospital patients, and the better training of its physicians.

With the first of the new year the Denver City Dispensary will also turn over its work to the College Dispensary, which has in many departments all the clinical material that can be advantageously utilized in daily teaching. These opportunities will also be open to the medical practitioners of Colorado who desire to devote time to post-graduate study. It is to be hoped that they will be more and more appreciated and utilized.

THE WESTERN SURGICAL ASSOCIATION.

On December 18th and 19th the Western Surgical Association will hold its annual gathering at the Brown Hotel in Denver. Dr. W. W. Grant, as chairman of the Committee of Arrangements, offers a cordial invitation to the members of the Colorado State Medical Society to be present at the sessions. Dr. Byron B. Davis of Omaha is the President of the Association. The First Vice President is Dr. Leonard Freeman of Denver. Among the extremely interesting list of twenty-six scientific papers are included one by Dr. W. W. Grant on "The Excessive Mortality of High Intestinal Obstruction," and one by Dr. Horace G. Wetherill entitled "A Plea for Higher Hospital Efficiency and Standardization." Dr. Ross C. Whitman will open the discussion on a paper by F. Gregory Connell on "Giant-Celled Tumor of Bone." The scientific program will begin at 10 a. m. on the 18th.

THE BARBER-SURGEON.

Few of us, in passing the barber's pole hung across the sidewalk, think of it as an emblem of the practice of surgery. Yet, just as the apothecary might prescribe medicines as well as mix them, so the barber once used the knife in pathologic conditions as well as to remove or trim the hairy appendages of the face and scalp; and the white spiral band around the familiar red and white pole represents the ribbon with which the patient's arm was encircled in the surgical operation of bleeding.

An address delivered to the Hunterian Society of London by Dr. Thomas Glover Lyon (*British Med. Jour.*, Nov. 7, p. 781), recalls a number of interesting details connected with the career of the famous Barber-Surgeons' Company of London.

The company was incorporated by Edward IV. of England in the year 1461, the closing year of the Wars of the Roses.

In spite of the authority conferred upon the company, many unqualified persons continued to practice the barber-surgeon's arts. The method employed to punish one of these offenders might perhaps be commended to the American College of Surgeons for modern application. In the reign of Richard III. one Roger Clark had given a piece of parchment rolled up and said to be inscribed with the words of a charm, to be used around the neck against fever. As a punishment he was "led through the middle of the city . . . with trumpet and pipe, he riding on a horse without a saddle, the said parchment and a whetstone for his lies being hung about the neck, and an urinal being hung before him and another behind." The surgeon Gale relates how in the continental wars of Henry VIII. "there was a great rabblement that looked upon themselves to be surgeons; some were sow gelders and some horse doctors, with tinkers and cobblers."

An Act of Parliament of the year 1541 united the Barber-Surgeon Company with the Company of Surgeons, and divided the members of the new company into barbers and surgeons. The barbers were not allowed to practice surgery except bleeding and drawing of teeth, and the surgeons were not to practice "barbery" or shaving. A candidate for the qualification of surgeon was first apprenticed to a surgeon, a member of the company, for five or seven years. A preliminary certificate to practice for three years was granted upon a viva voce examination and at the end of that time a final certificate was granted if the conduct of the applicant had been to the satisfaction of the authorities.

In 1745 the control of surgical practice was vested in a new corporation, the Col-

lege of Surgeons of London, which in 1843 became the Royal College of Surgeons of England. The relations between the Company of Barbers and the College of Surgeons have continued to be of a very cordial character, many of the members of the latter having joined and held office in the former. Lyon himself is at the same time president of the Hunterian Society and a warden of the Barbers' Company.

SHORT REPORTS OF CLINICAL CASES.

Every day of every week some case of special interest is in the care of one or other of the members of our State Medical Society. In proportion to population, the rare and exceptional occurs just as frequently in the small or thinly-populated as in the large and densely settled areas. In the majority of instances, the exceptional case serves to instruct no one but the physician or physicians who were actually in charge of it. Sometimes it reaches a rather wider circle in the shape of the local medical society, and furnishes material for an evening's discussion. It may then be briefly referred to in the report sent by the local secretary to his state journal. It would add to the usefulness and attractiveness of *Colorado Medicine* if more of our members would undertake to contribute reports of cases to the journal. Such reports do not call for the labor involved in writing a formal medical essay; and they should be a very frequent feature of that wide system of mutual and co-operative instruction which must always play a conspicuous part in the advancement of medical knowledge and skill.

The Editor will be glad to receive a goodly number of carefully-prepared reports of cases for publication in *Colorado Medicine*; and it is suggested that local

societies and their officers might well take an active part in stimulating their members to this form of literary endeavor.

UNLICENSED PRACTITIONERS.

The system of medical organization in this country, at whose head stands the American Medical Association, is based upon the membership of our county medical societies. Physicians elected to membership in the county societies become members of their state society, and members of the state societies in like manner enter the national association. It is therefore desirable that our county organizations should be careful to make all proper inquiries as to the legal and professional standing of candidates for membership.

A physician who recently died in tragic circumstances in a town of the western slope of Colorado proved on investigation not to have been licensed to practice in the state. Yet this physician had not only been elected a member of the local county society, but had also acted as secretary of that society. Although the offense is probably one of omission rather than of commission, yet any county society which thus accepts into its ranks a physician who is without legal right to practice must be regarded as failing in its duty, alike to itself, to the other members of the profession in the state, and to the public in the locality in which the physician unlawfully practices.

A CHANGE IN COSTUME.

Beginning with the issue of January, 1915, *Colorado Medicine* will present an appearance somewhat different from that which has hitherto characterized it. The reading page will be slightly larger, and the cover will be of cream-tinted, heavy glazed paper. At the same time the bind-

ing of the individual number will be by what is known as "saddle stitch" instead of the present "side stitch." In order to avoid additional expense for re-composition of matter carried over to the new size of page, it has been advisable, in this December issue, to dispose of all the reading matter which had already been put into type; so that this number contains less material from the last State Society meeting than would otherwise have been the case.

Original Articles

S. WEIR MITCHELL.*

**EDWARD JACKSON, M.D.,
DENVER.**

A great mountain may be better known by sketches made from different points of view than by a complete topographical map. More instructive than a formal biography may be the impressions left by a great man on the minds of those who saw him from different viewpoints. Without having had his close friendship, or much intimate contact with S. Weir Mitchell, I have been an interested observer of his career for nearly forty years, with enough of personal association to gain some individual impression.

When S. Weir Mitchell graduated in medicine at the Jefferson Medical College in 1850, his father, John Kearsley Mitchell, was its Professor of Medicine. So that aside from his own strong personality there was reason why the young medical student should have been especially noticed by his classmates. One of these, Dr. Jacob Price, who settled in West Chester, Pennsylvania, was the family doctor in my family from before my birth to the end of his life fifty years later, and in my

first years of practice I saw him almost daily. Through him I first knew Weir Mitchell, and his views of nervous disease and chronic invalidism, which Dr. Price had imbibed and applied in practice. Weir Mitchell has always been to me one of the distinct and interesting figures among the more eminent members of our profession.

From the fragments gathered concerning his early years in practice it is clear that he made strong friends and some equally strong enemies. He was self-confident, not retiring; earnest rather than modest. Some of the animosities he aroused were based on the feeling that the young doctor's advance was too rapid, resting rather on his aggressive manners, or his father's professional and social position, than his own scientific merits. In Dr. Price he had awakened respect and confidence, rather than any warm partisan feeling.

But those who failed to see the substantial reasons for Mitchell's professional rise must have been somewhat blinded to the facts, by prejudice or antagonistic interests. Before he had been ten years out of college he had published ten important papers setting forth original observations. Four of these had appeared in the *American Journal of the Medical Sciences*, one of the foremost medical journals then published in the English language; and four were communications made to the Philadelphia Academy of the Natural Sciences, where he took his place among biologists whose attainments were recognized throughout the world.

These earlier papers dealt with the formation of uric acid crystals, the blood crystals of the sturgeon, the pulse in expiration and inspiration, bibliographic notes on American memoirs on physiologic subjects, the inhalation of cinchona salts, the effects of alcohol, glycerine, and other substances on the isolated hearts of the

*Read before the Medical Society of the City and County of Denver and the Boulder County Medical Society.

frog, turtle and sturgeon, experiments in conjunction with Dr. William A. Hammond on the South American arrow poisons and the ordeal poison of East Africa, and the production of cataract in frogs by administration of saccharine substances. On this subject of the production of cataract, other observers have since spent years of experimental work. Römer in one series of experiments used 30,000 animal lenses. Yet in the more than fifty years since Mitchell published his paper very few facts of equal definiteness and suggestiveness have been established. In 1860 appeared his study of the venom of the rattlesnake, published by the Smithsonian Institution; the first of a series of studies of snake venoms that made him known throughout the world, and became the basis of our practical knowledge of the subject.

During these earlier years Dr. Mitchell's ambition and energy were directed toward achievements in the department of physiology. He aspired to teach this branch in one of the great medical schools. "Institutes of Medicine" the chair was called then, both in the University of Pennsylvania and in the Jefferson Medical College, the former having copied the title, I believe, from the University of Edinburgh. But in 1863 Francis Gurney Smith succeeded Samuel Jackson in the professorship at the university, and in 1868 James Aitken Meigs followed Robley Dunglison at Jefferson. Dr. Mitchell had failed to attain the coveted position.

It is said that Emerson's pet ambition was to be a college professor of philosophy, and to elaborate a system of philosophy. It is hard to suppose that either Emerson or Mitchell would have developed to the same greatness, or would have done equally valuable service to mankind, if he had achieved the college position that he coveted. When, a quarter of a century later, Mitchell became a trustee

in the University of Pennsylvania, his friends applied to him the words that the witch in "Macbeth" addressed to Banquo: "Thou shalt get kings though thou be none," and from that time no other influence has been equal to his in the choosing of professors in that great medical school. Of this others can speak better than I: Reichert, whom I knew in college, and who became professor of physiology seven years after he graduated; Osler, brought from Montreal; de Schweinitz, who left the university for a few years, to be called back again; and others. But the parallel with Banquo did not strictly hold. A dozen years after that, when the Philadelphia Polyclinic was struggling to establish itself on a sound basis as a school of clinical medicine, Mitchell accepted a professorship in it, and with his teaching opened to our students the great clinical opportunities of the Infirmary of Nervous Diseases.

With the outbreak of the Civil War Dr. Mitchell entered upon a new field of activity. He had already been associated with Dr. Wm. A. Hammond in joint investigations of the South American arrow poisons. Hammond became surgeon general of the United States Army, and Mitchell found in the Turner's Lane Hospital in Philadelphia the opportunity he was prepared to utilize in the study of injuries of the nerves. His work, partly in conjunction with two other able young men, W. W. Keen and G. R. Morehouse, soon brought him distinction in an important practical field. Neurology as we know it today had not then been differentiated from the general practice of medicine. He soon became the consultant of many physicians regarding nervous diseases, which were beginning to attract attention as particularly common and important among the class of Americans who are best able to pay a consultant's fee and to carry his reputation abroad.

There came into his practice a large number of nervous and hysterical women, a class of patients that become the despair of the family physician and the source of cynicism in the specialist. In this class of cases Dr. Mitchell scored an unusually good proportion of successes. Of course such successes are relative. Only rarely, in the recent cases, can success be complete. But to break the vicious circle and turn the patient from morbid introspection and emotion toward self-control and self-help, is a notable achievement. The importance of rest and nutrition he understood, and emphasized in a way that made the "rest-cure", synonymous with the "Weir Mitchell treatment." But recognizing the causes that had brought about this kind of invalidism, he illustrated perhaps his own observation: that "the greater men in my art were, even in days of extreme theories, more sensible in their daily practice than in their dogmatic statements."

He believed "a nervous woman should be made to comprehend at the outset that the physician means to have his way unhampered by the subtle distinctions with which bedridden women are apt to trouble those who most desire to help them." The first step in setting free the forces of health from the morbid inhibition that binds them is to break the chains with a violence that shall leave no doubt but that something has been broken. My father used to tell of a man relieved of the illusion that he had a bottle on his nose by a sharp punch on that organ by his physician's fist. I doubt not many a patient of Weir Mitchell was started on the road to recovery by a violent gust of anger.

A characteristic case was one that had worried a friend of mine, then a young man, into calling consultation. The wife of an officer suffered severe "nervous attacks" when he was ordered away from home. On this occasion Weir Mitchell

stalked into the room where the apparently unconscious woman lay, and turned and asked in his loud, harsh voice, "Doctor, what did you say was the lady's name?" "Mrs. Wiley, Dr. Mitchell." "Oh, I see; Wiley by name and wily by nature." It was her last attack. Doubtless this need, to present in a positive personality by strong, rough, even boorish disregard of feelings, the hard facts of life, as a first step toward getting control of a difficult situation, accounted for the absence of that feeling of personal attachment which most popular doctors inspire in some or many of their women patients. I have heard a number of Dr. Mitchell's neurasthenic patients talk of him, some by the hour. The general verdict was that he had done them good, but they thought he might have done it in a nicer, more gentlemanly way.

In 1867 Dr. Mitchell joined with certain surgeons in establishing the Philadelphia Orthopedic Hospital and Infirmary for Nervous Diseases. It was often called for short the Orthopedic Hospital. But from the beginning Dr. Mitchell was its dominating force, and it is now sometimes referred to simply as the Infirmary for Nervous Diseases. Here he did his public work and teaching. Here were largely trained the young men that he gathered around him: Sinkler, who died before him; Mills, Dercum, Morris Lewis, J. Madison Taylor, his son, John K. Mitchell, and many others. It was a striking feature of his career that he almost altogether worked with younger men, and the affectionate and respectful way in which they called him "The Old Man" was a revelation of the free and healthy character of their relation to him.

I met Dr. Mitchell most frequently in the Library of the College of Physicians. In the lean years of waiting, that followed my removal to Philadelphia, I was fortunate in securing early admission to the

college, and there spent many profitable hours. He was one of the most frequent visitors. Most afternoons that he did not go to the hospital, or often on his way there, he came in. More or less he was on business of the college, for he was the active leader in that organization for more than a quarter of a century; often he came to seek and consult some book, but sometimes to linger a little and chat as though he felt it the pleasantest place he knew to bestow his scanty idle moments.

I remember my surprise when one day he told me he had just sent to the college the last books of his medical library, except the few he was then especially consulting or reading. When I knew that library better, the value of its complete organization and arrangement, the convenience of working where any desired book was easily at hand, I understood better the wisdom of his course. From the College of Physicians he drew much of the solid satisfaction of his mature professional life; and he gave to it greatly. His library was but a start in giving. His contributions of money, and those that he secured from patients and friends, whose interest in the institution was but a feeble reflection of his own, carried it far toward the financial prosperity it now enjoys. There is the Harvey collection, with the tracing of the inscription he took from the grave of Harvey, the incunabula, the portrait he secured of Oliver Wendell Holmes, and presented with verses that set forth in simple honesty his thought and feeling for the man with whom he will be most frequently compared, and many other material gifts. He was a Fellow of the college for fifty-seven years, and held important office in it most of that time. Not only in the magnificent main hall of its new building, named for him, in the Directory for Nurses, the S. Weir Mitchell lectures, or the entertainment fund, but in every

part and custom of the college, can the informed observer find traces of Weir Mitchell.

As time went on he gained the united confidence of the older Fellows of the college. Probably the last note of dislike and jealousy toward him was heard in connection with the centennial of the college twenty-six years ago. The younger Fellows were always with him, for he was ever wisely looking forward, and had no fear of progress. In 1890 some of us wished to start in Philadelphia an ophthalmological society (now three active ophthalmologic organizations meet there each month). But we found that the older men, Norris, Harlan and Thomson, would have no part in it, unless it could be arranged under the auspices of the college. A formal section would not be considered by the governing powers. It would too violently shock established traditions. So we humbly asked that once a month the use of the smaller meeting room might be granted to Fellows interested in ophthalmology. Yet such a radical innovation as that would never have been permitted had we not secured the support of D. Hayes Agnew, then the president of the college, and of S. Weir Mitchell, who advocated it from the floor. We got the permission for three years. At the end of that time the college adopted a by-law providing for the formal organization of sections, and immediately four sections were organized.

Mitchell's professional day was a strenuous one, even when he approached three score years and ten. I met him at his office one day near the close of his hours. He told me that his secretary had counted thirty-eight people waiting for him that morning. They filled his large reception room, and the little room that opened from it, and were sitting on the stairs all the way to the second story. He said, "All morning I have had to say to myself,

'Don't hurry, don't hurry'." Most of the people had to be sent away to come again next day. But the habit of thoroughness was so ingrained that it withstood the pressure.

At the close of the office hours his carriage was at the door and we drove to the hospital. There his assistants had prepared the cases they wished him to see, and a half dozen of the younger men were in attendance at his clinic. After an hour spent in examination of case histories, cases, and laboratory reports on them with informal discussions of these patients, he made the rounds of the hospital. After this he sat down to a very simple luncheon, regularly prepared for him there. After that he left, to see a few patients in homes or private boarding houses, and to meet business engagements.

A recent note on his death says that to spend an evening at his house was to get away immediately from routine and the commonplace. I remember one such evening, when, by appointment, I brought a friend, a young clergyman recently from Canada and himself a talented amateur in literature. Dr. Mitchell had recently discovered Charles Leonard Moore, a Philadelphia poet of rare fancy and delicate expression, and was particularly interested in his sonnets entitled "Day Dreams." He proceeded to reveal the poetry and to some extent the poet to us, reading from a copy, with the author's emendations; and pointing out with great enthusiasm the beauties he had found. Other things came up, the nature of the ability, which my friend had largely, to take in the substance of a page at a glance, the charms of the Canadian forest, and the great plains of the Northwest. The conversation was animated, pointed, suggestive, and the listener had a full share in the enjoyment.

Of Dr. Mitchell's successes in fiction and poetry there is little time to speak.

His writings have a peculiar interest for me, and they must have for most of our profession, because he sees things always from the physician's point of view. Physiology, psychology, and even medicine of the most practical kind, appear in all his stories. Let me illustrate with his last work. The life at "Westways" is an illustration of hygiene for young people; the studies to give steadiness and purpose, the freedom and incitements of out-doors, the swimming-pool, the skating. It sets forth a more attractive propaganda of healthy living than can any formal treatise. Dr. McGregor, seeing things from his doctor's standpoint, becomes the oracle of the book. We may wonder a little, when he sends Ann Penhallow away for three months to Cape May, that the application of the rest cure to a "nervous" woman should be so well understood in the fifties, before Weir Mitchell had worked it out. But the author well knew that wise doctors have been in all generations; and principles may be applied before they have been formulated. In the account of the Civil War we come with startling distinctness upon Mitchell's work on injuries to the nerves; and his account of the slow degenerative changes in the mind of James Penhallow, after a fracture of the inner table of the skull at Gettysburg, is a masterpiece. But for me the climax of interest is found in his picture of the great surgeon, who overcomes the prejudice of the patient and his wife against operation. No one who knew D. Hayes Agnew can fail to recognize the original, even without the allusion to General Hancock, treated by him after the battle of Gettysburg.

"Characteristics," and "Dr. North and His Friends" are more frankly medical. But the plot in "Far in the Forest" is strictly psychological. "The Adventures of François" contains some fine studies in mental disease. In "The Red City" is

found what is, with the single exception to be mentioned, the best account of the great epidemic of yellow fever in 1793; albeit, there is a trace of the mosquito theory of a century later, when Stephen Girard advises the Vicomte de Courval to smoke freely as he watches his sick friend.

Weir Mitchell gathered his full sheath of honors, L. L. D. from Harvard, Edinburgh, Princeton and Toronto; M. D. Honoris Causa from the University of Bologna, and member of many of the learned societies of Europe. He was well suited to live in the public eye, and he enjoyed it. I recall him as the dominant figure on three important occasions. When, in 1887, the College of Physicians celebrated the hundredth anniversary of its institution he was its president and delivered the commemorative address. Tall, but bent forward, with strong, distinct voice, slow, emphatic diction, and solemn earnestness of manner, he rose to a climax in his story of the yellow fever in 1793, and the stern adherence to principle of the Fellows who faced pestilence and panic, labor without return, and impending death, for duty.

Then at Washington as president of the Second Congress of American Physicians and Surgeons in 1891 I heard him trace the "Early History of Instrumental Precision in Medicine," touching with rare sympathy the high lights of great achievements, and the black shadows of neglect with which they were met by their day and generation. Again, at the Fifth Congress, in 1900, after the address of the president, Dr. Bowditch, he read his poem on "The Physician." That meeting, like most of the great gatherings of the year, had something to say in commemoration of the century just closing with the struggle in Cuba and the Philippines; and, particularly in Washington, much of the pride and pomp of war. From the back of the great opera house I heard distinctly

every word of the poem, and witnessed the intense and growing stillness of the listeners until he closed, thus:

"Swift pass the days. Our century slowly dies,—

Quick beats her pulse and filmy are her eyes.

Her flowing robes are red with countless wars,

Her tender breasts are sad with many scars;

Yet in her dying eyes prophetic glows
Some sweet prediction of a world's repose.

Lo, at her side the coming sister stands,
And bends to hear, and folds those wasted hands.

'What shall I bring which thou hast failed to find?

What nobler hope have I to give mankind?'

Hark! From the lips where life had seemed to cease

Comes the low murmur: 'Thou shalt give them Peace' "

318 Majestic Building.

FISH AND SHELL-FISH POISONING

With Illustrative Cases.*

C. B. VAN ZANT, M.D., DENVER.

If an apology were needed for presenting before this society a paper on so trite a subject as fish and shell-fish poisoning, it would be found in the fact that the use of sea products carries a special menace in an inland region like Colorado. Remote as we are from our common sources of supply of these denizens of the water.—the Pacific, the Gulf, and the Great Lakes,—many days or even months may elapse after they leave their native habitat before they reach our tables. In this fact, coupled with imperfect methods of preservation, lie the special dangers to

*Read at the Annual Meeting of the Colorado State Medical Society, September 9, 10, and 11, 1914.

the user of these articles of diet. The cheapness of fish, compared with the cost of meat, as well as their high nutritive value, is leading to their larger use the country over. Elsberg, the head of the Bureau of Chemistry at Washington, in his earnest advocacy of the more extensive use of sea-foods in this country, has recently initiated a promising propaganda in food economics.

For these reasons a brief review of the various types of poisoning by fish and shell-fish, with some illustrative case reports, may not be without a measure of interest.

As an introductory general statement, it may be said that, though in a strict dietetic classification fish are differentiated by some from meat, yet in poisoning by both of them the causative agents, the clinical effects, the dangers, and the treatment are much the same. It is curious, and suggestive of an anaphylaxis, that fish actively poisonous to one person may be eaten with impunity by another.

Fish poisoning, ichthyismus, or ichthyotoxismus, naturally is most common in countries like Japan, Russia, and the East and West Indies, where fish form so large a part of the general diet.

If we disregard infections resulting from the ingestion of fish infested with the larva of the *bothriocephalus latus*, poisoning by fish or shell-fish results from one of three classes of toxic substances present in them. First, natural or physiological poisons contained in healthy fish. Second, metallic or other poisons. Third, bacteria or bacterial toxins.

First, it is to be remembered that many varieties of fish, the world over, are invariably poisonous. This is especially true of fish living in tropical waters. Among these forms may be mentioned various members of the sturgeon, pike, and barbel families.⁽¹⁾ Some of these are poisonous at all times; others, only dur-

ing the spawning season. Even cod and perch, eaten fresh and raw, may at times cause grave intoxication. It is said that in Tokio, between 1885 and 1892, 993 cases of poisoning by the fugu fish were reported, with a mortality of 68%.⁽²⁾ So dangerous is this fish, through its natural poisons, that it is eaten in these oriental countries for suicidal purposes. The active poison resides in the ovaries and testes of the fish, and may lead to death in an hour or two, with symptoms resembling curare poisoning. This poison is not usually destroyed by boiling the fish.

Second, where the fish are contaminated by metallic poisons. The assertion has been made that the poisoning from canned sea products at times may be due to lead in the solder, or to tin, dissolved by acid or alkaline substances in the contents of the can; but it is generally agreed that this source of poisoning must be rare indeed.⁽³⁾

Third, where the fish are infected by bacteria or their products. This cause underlies the great majority of cases of poisoning from the ingestion of fish; for it is a well-attested fact that fish constitute a good medium for the development of various bacteria. Through feeding on sewage, or through contamination after being caught, the fish or shell-fish may become the hosts of pathogenic germs. These, transmitted to man, may lead to a direct bacteriemia, or simply to a toxemia, due to poisons elaborated in the fish by the bacteria. "The toxicity of shell-fish bears a direct relation to their habitat." In polluted waters they take up bacteria freely; but even then, on being transferred to fresh clean sea water, they lose their bacteria in from two to four weeks. Obtained from the open sea, shell-fish are almost invariably safe to use.⁽⁴⁾

Occasional outbreaks of typhoid or paratyphoid fever have been directly traced to the use of fish,⁽⁵⁾ oysters, and

mussels, obtained from polluted waters, though careful search for the specific germs of these diseases has not always led to their isolation.⁽⁶⁾ Winter typhoid from this cause, however, is very infrequent, because, as Gorham has shown, oysters rest or hibernate in cold weather, their ciliary movements cease, and they do not feed. They become practically free from sewage germs, even when they lie on sewage-polluted beds. This fact was corroborated by Joseph in an investigation conducted in the Laboratory of Hygiene and Bacteriology at the Johns Hopkins University. He found that the oysters sold in Baltimore in winter were in general free from sewage contamination, while in summer they were occasionally infected.⁽⁷⁾ Bardet,⁽⁸⁾ however, maintains that in summer practically all oysters are diseased. These facts give a well-grounded justification for the disuse of oysters in the months whose names are free from the letter "r".

Recurring to the general bacteriology of infected fish, the following organisms have been isolated in various cases of poisoning—as causative of either an infection or a toxemia: *bacillus proteus*, paratyphoid bacillus B, *bacillus coli*, and Gaertner's bacillus (*bacillus enteritidis*). The *bacillus botulinus* has not yet been demonstrated in fish, though some cases of fish poisoning have so closely resembled botulism as to suggest that *bacillus* as a probable cause.⁽⁹⁾ In shell-fish poisoning a wider bacteriology has been proven, embracing the typhoid and paratyphoid bacilli, cholera bacillus, colon bacillus, *bacillus proteus*, *bacillus enteritidis*, and *bacillus botulinus*.⁽¹⁰⁾

If the fish is infected by the *bacillus proteus*, putrefactive changes, as evidenced by a putrid odor, will give timely warning; but colon bacillus infection of the fish is unattended by odor or other monitor.

As has been stated previously in this paper, the poisoning caused by fish usually resides in their contained bacteria or in the bacterial toxins. The exact chemistry of these toxins has not been well worked out, though in the case of certain poisonous mussels, Brieger⁽¹¹⁾ succeeded in isolating a poisonous alkaloid which he called mytilotoxin. It is intensely poisonous, resembling curare in its effects. From various species of the tetrodon family of fish a crystalline toxic substance, tetrodonin, has been obtained.⁽¹²⁾

As these bacteria and their toxins react very differently to the methods commonly used to prevent their formation or to destroy them, a few words as to these methods may not be out of place.

First, as to cooking of infected fish. Ulrich⁽¹³⁾ maintains that ordinary boiling of fish does not kill all the contained bacteria; and that, if the fish is kept for some time after it is cooked, especially in hot weather, bacterial multiplication may be rapid and may lead to disastrous results. Some bacterial toxins in fish are soluble and readily destroyed by the heat of cooking; and are therefore dangerous only when the fish is eaten more or less raw. On the other hand, and this is a point of vital importance, some toxins present in infected fish resist even prolonged boiling, and so remain as a menace to the user of the fish. Whether the particular toxin, therefore, will be destroyed by heat must depend upon the kind of bacteria that produced it. For instance, the *bacillus botulinus* forms a poison that is readily decomposed by heat; whereas the *bacillus paratyphi* B produces a toxin that withstands even prolonged boiling.⁽¹⁴⁾ These differences account for the protection afforded by cooking in some cases and its absence in others. The cooking usually sufficient to destroy the contained bacteria, but not always their associated toxins.⁽¹⁵⁾ If the processing, as it is

called, is too brief or at too low a temperature, disaster may result, through failure to destroy some of the bacteria or their toxins. If any bacteria remain, the contents of the can may undergo putrefaction, with the evolution of gas, causing a bulging of the ends of the can. This constitutes what, in the elegant parlance of trade, is called a "swell," or a "blown" can. Such a can, no matter what it contains, should always be discarded as containing dangerous contents. But, with other non-gas-producing germs in canned fish, the warning thus given by the can is not available; nor may there be any evidence to the physical senses of toxicity in the contents. Some indeed of the bacteria most highly toxic are of non-aerogenic varieties.⁽¹⁶⁾

Second, as to the salting of fish. According to Konstansoff,⁽¹⁷⁾ where bacteria are present in fish, salting the fish with not less than 15% of NaCl destroys them; or in fresh fish prevents their development. Nevertheless it is a fact of importance that any soluble toxins previously elaborated in the fish remain and exert their baneful influence.

Third, as to the smoking of fish. Imperfect smoking of more or less decomposed fish fails to destroy the contained bacteria, and infection often follows their use.⁽¹⁸⁾

Fourth, as to the freezing of fish. Frozen fish are now sold in all the marts of the world. In some cold countries, like Siberia, they are offered for sale stacked up in great piles, like cord-wood. Exhaustive studies of the effects of freezing and cold storage of fish have recently been made in the Biochemical Laboratory of Columbia University.⁽¹⁹⁾ These indicate that there is no diminution in nutritive value, no change in the "sanitary character, culinary virtues, or palatability of fish long frozen by current trade methods." Yet when removed from proper

cold storage, and exposed until sold, or kept in an ordinary refrigerator, or if they were originally spoiled or infected, the fish can scarcely be given a clean bill of health for human consumption.

Clinically, fish and shell-fish poisoning present themselves in one of four forms: (a) Gastro-enteric. (b) Erythematous or urticarial. (c) Cerebro-spinal. (d) Typhoidal.

In the majority of cases the first two forms are the ones which present themselves. The gastro-enteric form is characterized by vomiting, diarrhoea, and abdominal pain, lasting a few hours or days. It may or may not be attended by an urticarial eruption. In exceptional cases a fatal issue may occur, preceded by dizziness, tremor, prostration, and syncope. In these cases severe lesions of the gastrointestinal tract, fatty degeneration of the liver, and toxic degeneration of the heart may be revealed at autopsy. A case of fish poisoning which occurred some years ago in the practice of Dr. Leonard Freeman, and which is quoted through his courtesy, very forcibly illustrates these organic results. At a restaurant two men ate fish preserved with some chemical, presumably formalin. Both of them soon became ill, with vomiting, purging, and tenderness over the whole abdomen. The men vomited some of the fish unchanged as late as the tenth day after its ingestion. About eleven days after eating the fish, one of the patients, a strongly-built man of 45, exhibited symptoms of beginning obstruction of the bowels; but actual obstruction, with fecal vomiting, did not occur till the thirteenth day. No blood was vomited or passed by bowel. The temperature was 100°, the pulse 80, the urine normal. At operation on the fourteenth day, a portion of gangrenous bowel was found, about two feet in length, the gangrene being due to thrombosis of the mes-

enteric vessels. The patient survived the operation but a few days.

In the second type, a severe erythema, or more often urticaria, appears, with little or no gastro-intestinal disturbance. In an occasional case of this type, coincident with the appearance of the exanthem, an enanthem or vaso-dilatation may occur in the respiratory mucosa, throughout its length. This occasions a distressing if not actually dangerous dyspnea,—as in the following case seen by the writer a few years ago. The patient, a man of 40 years, a few hours after eating some shell-fish, was seized with vomiting and abdominal distress, soon followed by the appearance of a severe urticaria over the whole body. At the same time he became intensely dyspneic, complaining of great oppression in the chest. Sibilant, sonorous and coarse moist rales were audible over the entire chest, and a typical asthmatic paroxysm was in evidence. Tenacious mucus was brought up with great difficulty by a constant cough. Repeated hypodermics of adrenalin gave great relief, and the bronchial vaso-neurosis and urticaria subsided with equal pace in thirty-six hours.

In its essential features, the third or cerebro-spinal type of fish poisoning is like botulism and is often fatal. It is rare and usually results from the ingestion of shell-fish, more especially mussels. The ill effects begin in ten to twenty-eight hours, and consist of paralytic phenomena, similar to belladonna poisoning—such as weakness, dull pain in the abdomen, dyspnoea, mydriasis, diplopia, impaired vision, vertigo, dryness of the mouth and tongue, inability to swallow, loss of speech, and death from failure of the respiratory center.⁽²⁰⁾ There is no vomiting, diarrhoea, fever, or unconsciousness. Death may occur in fifteen minutes or be deferred a few days or a week. Even where recovery occurs, the case may run a course of weeks or months.

The fourth form of fish poisoning is distinctly typhoidal. In these cases, especially common after eating shell-fish, the typhoid or paratyphoid bacillus may or may not be discoverable in the mollusc itself, or in the blood or organs of the patient. The disease runs a more or less typical course of three to six weeks' duration. An example of this type, recently in the writer's care, may here be briefly described. A business man, 55 years of age, while at his hotel in Butte, Montana, ate some broiled crabs from Puget Sound. They seemed fresh and palatable, so much so that the next day he ordered them again. A few hours after this second indulgence he was seized with severe cramps, vomiting and diarrhoea. These continued for a few days, the patient in the meantime reaching his home in Denver. He was weak, pale and inclining to semi-stupor, with a temperature of 101°. There was distress and also slight tenderness over the whole abdomen; in other words, a moderate enteritis. In five or six days the fever disappeared, though the mental hebetude continued. After a week without fever, this reappeared, the typhoid facies and condition rapidly became accentuated and the abdominal distress greater. Slight tenderness could be elicited over the whole abdomen, gradually localizing at the appendix, coincident with the development of a tender, firm mass there. Evidently the brunt of the attack centered in the appendix; but as repeated blood counts showed never more than 11,000 leucocytes, and as the fever, pulse rate, tenderness, rigidity and palpable mass gradually grew less, surgical interference was deferred from day to day, and finally discarded as unwise. The typhoid condition lasted nearly four weeks, the temperature ranging from 99.5° to 103.5°, irregularly. Delirium was slight, but the mental dullness marked, throughout the disease. Diazo,

Widal and blood culture tests were constantly negative. There were no rose spots, enlargement of the spleen or microtism of the pulse. A good recovery followed, the case lasting altogether about eight weeks.

The prognosis in the ordinary cases of fish and shell-fish poisoning is good; in the typhoidal cases more serious; in the cerebrospinal form most grave.

The treatment of the gastro-intestinal and typhoid cases differs in nowise from the usual lines followed in similar cases of other origin. For the type resembling botulism, emetics and lavage, purgatives and colonic irrigation, and hypodermic stimulation are indicated. In this most dangerous form of fish poisoning a special antitoxic serum which Wassermann has prepared at the Institute for Infectious Diseases at Berlin may be worthy of trial.

462 Metropolitan Building.

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DISCUSSION.

E. C. Hill, Denver: I can add very little to the masterly exposition of this subject by Dr. Van Zant. In connection with canned fish and meat, experiments show that a considerable part of the change is due to the action of autolyzing ferments rather than bacteria. This autolytic process in the case of fish is detrimental, whereas it ripens meat for the time, so that there is improvement as to taste and digestibility. Fish that are softer, like salmon, are more prone to this autolysis and are likely to cause trouble. Oysters not infrequently give rise to cases of poisoning, sometimes from the water which has been added to them. You can strain off ten to twelve per cent. of the weight of oysters, naturally, but when water or ice has been added to the oysters, then the weight of water which can be strained off may be as much as fifty per cent. The water used to "bloat" oysters may be contaminated, which makes them putrefy more readily, and they quickly become "sour." Mr. Wilbur F. Cannon, our pure food commissioner, some years ago made a successful attempt to prevent dealers from having water or ice added to the oysters.

Of the bacteria mentioned by Dr. Van Zant as giving rise to trouble in fish poisoning, by far the most common is the bacillus proteus. This is a liquefying germ rather than an actively aerogenous one. We seldom get swelled cans with spoiled meat or fish as we do with spoiled vegetables.

As to my own experience, I have had a few cases of oyster poisoning and many cases of poisoning from salmon. People should eat salmon the day the can is opened.

In regard to anaphylaxis as a factor in cases of fish poisoning, I do not think it such an important factor as deficient elimination. For instance, in a recent case where a mother and two daughters were poisoned by eating freshly-opened canned salmon, the mother and one daughter quickly recovered except for vomiting once or twice. The other daughter was quite sick, because she could not throw the poison off as the others did. She had a high fever, with headache and pain. This patient nearly always has a badly-coated tongue.

The treatment which I employ in such cases is half a grain of calomel every half hour, followed by a good dose of salts every half hour until the bowel is cleaned out. An ice bag on the epigastrium quiets nausea, and used at the nape of the neck it lessens fever and headache.

The case mentioned by Dr. Van Zant at the close of his paper may have been one of paratyphoid infection. B. paratyphi A and B. paratyphi B do not react to the Widal test, but are detected in blood cultures by their specific reaction with dried agglutinating sera, now furnished by leading pharmaceutical manufacturers.

Leonard Freeman, Denver: It is too late to enter into any extended discussion, but the very great danger of mistaking these cases of fish poisoning for cases of acute appendicitis should be mentioned. This mistake is frequently made, the case being called "acute in-

digestion." Every surgeon comes across such mistakes once in a while. One does not mean to say, of course, that acute indigestion may not cause appendicitis secondarily, and in such cases the danger lies in the non-recognition of the line of demarcation between the two things. It is usually the worst cases of acute appendicitis, the so-called fulminating cases with vomiting and epigastric pain, and leading to gangrene and perforation, that give rise to mistakes in diagnosis, hence these mistakes are correspondingly dangerous.

In the differential diagnosis one has to remember that appendicitis does cause pain in the epigastric region and vomiting; and sometimes the other and more characteristic symptoms of appendicitis are absent. In those acute cases where the appendix is deep in the pelvis and sub-peritoneal, you may not get any rigidity or any local tenderness, or the pain may be diffused over the abdomen, there being general peritoneal irritation. A good point in the diagnosis is this, that where a number of people have eaten of the same food, and only one person develops serious difficulty, it is suggestive of appendicitis. I suppose it is safe to regard every one of the cases of acute food poisoning as possible appendicitis until it is proven to be otherwise.

G. A. Moleen, Denver: In view of the discussion I should like to know if the question of anaphylaxis is to be disregarded as the cause of the disturbance in association with oyster food. Anderson and Rosenau of the Marine Hospital Service have written on this subject, and I gleaned from their report that it was of significance.

O. M. Gilbert, Boulder: I should like to ask the author of the paper to show the connection of fish poisoning with ptomain poisoning. All these cases are commonly called ptomain poisoning.

Philip Hillkowitz, Denver: The subject of shell-fish poisoning naturally calls to mind the classic studies of Richet on the poison extracted from the tentacles of actinia or sea anemone, which led to the discovery of the phenomenon now designated as anaphylaxis. These animals of course are very low in the scale of life, and far removed from the complex structure of the shell fish used as food. It was found that when a sublethal dose of the poison extracted from the actinia, known as actinotoxin, was administered, a second dose given after a certain interval was followed by rapid and fatal poisoning, even though the amount injected was considerably smaller than the first. Instead of an increased resistance, or immunity, an increased susceptibility developed. From this original observation of Richet are derived the numerous subsequent studies which make up the large literature on anaphylaxis. How much of a rôle anaphylaxis plays in shell-fish poisoning future investigations will tell.

C. B. Van Zant, Denver (closing): Dr. Hillkowitz has answered the question with reference to anaphylaxis better than I could.

Some of these toxins are grouped among ptomaines or putrefactive alkaloids; others cannot

be so classed. I think the general opinion is that in fish poisoning the toxins are quite as often causative as are the bacteria themselves.

O. M. Gilbert: As I understand, these cases of poisoning by bacterial toxins are not, strictly speaking, cases of ptomain poisoning.

C. B. Van Zant: One toxin, at least, mytilotoxin, is a crystalline alkaloidal substance, classified by its discoverer, Brieger, as a ptomain.

P. Hillkowitz: The term ptomain poisoning should be relegated to the scrap heap and go the way of uric acid intoxication. It is a relic of the earlier period of bacteriologic investigation, when search was made for alkaloid-like poisons in the toxic products of bacteria. Brieger found substances possessing basic properties in putrefying matter and attempted to isolate them chemically. Most of them were found to be amines and diamines; in other words, split products of protein decomposition. Vaughan isolated from spoiled ice cream a similar principle—tyrotoxin—which was supposed to be the cause of poisoning. Later, however, this theory was abandoned. The present-day opinion is that food poisoning is caused by bacterial infection. If due to bacterial toxins, these are not of the nature of ptomaines, whose chemical composition is more or less determinable, but highly complex albumins similar to those produced by the well-known pathogenic bacteria. In this connection it may be well to refer to Abderhalden's view that the toxins are poisonous intermediate products caused by the ferments of the host acting on the proteid substances of the bodies of the parasites. The organism endeavors to rid itself of the invader like any other foreign body or food by a process of digestion. In this process are formed these poisonous products which are foreign to the delicately adjusted metabolism.

META OR PARASYPHILIS.*

GEORGE A. MOLEEN, M. D.,
DENVER.

In recalling the words of Tennyson:
"The old order changeth, yielding place to new,
And God fulfils himself in many ways,
Lest one good custom should corrupt the world"

one might, in the light of our present views or seeming knowledge of the subject, feel that the statement applied nowhere more fittingly than to the subject of syphilis.

It is without doubt also true that, were it not for the affections of the nervous

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system, syphilis might be deprived of its greatest terrors and take a place subordinate instead of preeminent amongst the infectious diseases whose sequels are so thoroughly feared. And how much more striking this is in that class of sequels which have been termed "meta" or "para" syphilitic affections!—a group of diseases, the effective treatment of which has spelled inevitable failure from the very beginning, with very few, if any, exceptions.

From the time of the demonstration by Metchnikoff and Roux in 1903 that syphilis could be produced by inoculation in chimpanzees, and two years later the discovery of the spirocheta pallida by Schaudinn, up to the present time many discoveries have been made, which are so well known as not to require enumeration. Suffice it to say that while we have learned much regarding the nature of syphilitic processes there yet remains a great deal to be explained. And this applies especially to the so-called metasyphilitic diseases.

In this expression we refer particularly to tabes dorsalis and general paralysis of the insane, but probably should include some of the late primarily degenerative processes in the spinal cord.

The notable responsiveness of the syphilitic infections to specific treatment and the ineffectiveness of such treatment to control the progress of the metasyphilitic diseases had a most powerful influence in casting doubt upon their syphilitic origin; and this doubt existed in the minds of many until the demonstration of the organism in the brains of paretics by Noguchi and others. Such statements as that made by Spitzka in 1877 (*Journal Nervous and Mental Diseases*, v. 3, p. 270) in speaking of the retinal changes in progressive paralysis: "A third case of advance paresis, the distant result of an injury received at the battle of Bull Run,

exhibited no retinal change whatsoever," are indicative of the state of knowledge at that time.

In 1882 Thomas Buzzard (*London Lancet*, June 10, 1882, p. 391), speaking of treatment, said: "Now and then, it is true, we meet with cases (tabes dorsalis) which improve remarkably for a time while iodide of potassium is being administered, but in my experience I have never known a cure to result from specific measures." And further: "In 1871, writing upon the subject of syphilitic affections of the nervous system, I included locomotor ataxia among the nervous affections belonging to the tertiary stage of syphilis. . . . But the remarkable absence of successful results appeared to throw so much doubt upon the matter that I carefully excluded the disease from consideration in my work on syphilitic nervous affections."

How different is our view today! Truly things have changed when we can say with but little, if any, reservation, "No syphilis, no tabes" as well as "No syphilis, no paresis."

In the taking of neurological case histories a severe outburst of the symptoms of syphilitic infection is less frequently recorded than a mild or doubtful showing. This may be explained in part by the fact that the severe cases are most likely to have received energetic treatment for a long time, and therefore to be remembered, while the ones mild in manifestation are lightly and too often insufficiently treated. These lighter or insufficiently treated cases seem to be in the majority where a history of infection can be obtained at all.

Occasionally, though very rarely, undoubted cases which have received no treatment have developed very rapidly, evolving types of metasyphilis as, for example, a patient of the writer's who within a year of the primary infection

developed paresis which lasted only a few months. I saw in the clinic of Byrom Bramwell a case of tabes with severe gastric crises which also had developed within a year of the primary sore.

When we consider the great number of syphilitic infections, the comparatively small number of metasyphilitic conditions is quite striking. In other words, only a small percentage of those infected develop them—only about 2 per cent, according to the figures of Mettler. Likewise, it is a matter of frequent comment that in those countries in which syphilis is extremely common metasyphilis is quite uncommon. In Africa, syphilis is stated to exist in 75 per cent of the Arabs, while tabes is almost unknown.

What, then, are the determining factors of the development of metasyphilitic disease? This, it would seem, is the all-important question, for aside from the pathologic, diagnostic, prognostic and therapeutic aspects of metasyphilis being so dependent upon the determining factors, these must also have a most important bearing upon prophylaxis, were they definitely known.

Studies have been made in individual susceptibility, inherited or acquired predisposition, or specialized sensitization of the tissues; in variation in quality or virulence of the spirochete; in the possible existence of different strains of the organism, and the influence of an assumed toxic virus upon them, and in the possibility of symbiosis of the treponema with some other organism. All of these explanations have been considered and well defended by their advocates, and the best that one can say is that they are more or less ingenious but not flawless.

Of the acquired predisposing influences, alcoholic and sexual excesses would seem to be especially noteworthy.

The hypersensitization of the tissues has been recently brought forward (Brain,

v. 36, July, pp. 1-177) to explain the involvement of certain parts of the nervous structures. The tissues are believed to become sensitized in the secondary stage, the lassitude and headache at that time being thought to represent the process clinically.

In the words of the authors, "In our view tertiary and 'parasyphilitic' phenomena are manifestations of hypersensitiveness ('Hyperallergie') which reaches its extreme form in anaphylactic shock. As the tissues are hypersensitive, they react more strongly to a minute dose of the poison, and hence some of the difficulty of discovering the spirochete in gummatous and parasyphilitic tissues."

It is further reasoned that the essential difference between tertiary and parasyphilitic manifestations is determined by the tissues sensitized—in the former the vascular and connective tissues, or those inclined to proliferative changes; in the latter "highly differentiated nerve element which have no power of regeneration."

The theoretical difference in quality or virulence of the organism Neisser (*Neurolog. Centralbl.*, 1913, Nr. 20, p. 1308) believes to be negated by all animal researches, although admitting that the later periods of syphilis have not been observed in animals. Human and bovine tuberculosis are recalled by Erb as analogous.

The view that there exists a variety of strains of the spirochete has, for many reasons, held favor and even the possibility that separate strains determine paresis and tabes has been mentioned.

The finding by Noguchi and Moore of the treponema pallidum in twelve out of seventy brains of paretics has removed the doubt of the syphilitic nature of this disease, and while they have not been found in so great a percentage in cases of tabes, there is every reason to believe that the organism is as constantly present in

this as well as the other so-called parasymphilitic diseases, because of the striking similarity of the histopathology, the degenerative character of the lesions and the ineffectiveness of treatment.

It becomes clear that there are certain cases of syphilitic infection in which, after a seeming abatement or remission of the symptoms of from usually five to fifteen or twenty years, there develops a degenerative disorder of the nervous parenchyma which, while resembling more or less closely other forms of cerebro-spinal syphilis, yet differs in many important particulars.

In spite of these facts there are those who, in view of the recent finding of the organism in the brain and spinal cord in paresis and tabes, maintain that there is no difference between these processes and cerebral or spinal syphilis commonly so-called. However, the majority are of the opinion that because of the peculiar histopathology, the difference in biologic reactions and the diverse therapeutic results, we are justified in distinguishing paresis and tabes as para or metasyphilitic diseases, and that the use of these terms is warranted at least until more sufficient reason is shown for their abandonment.

DIAGNOSIS.

Probably the most important consideration in connection with this group of diseases is the early diagnosis, for up to the present time the prognosis has been extremely dark.

The primary degenerative process underlying these latent syphilitic cases makes it highly desirable that their nature should be known as early as possible, for while no treatment has so far been shown capable of definitely arresting the process when once established, yet nothing can be expected in the way of regeneration should a satisfactory treatment become known, and the hope must

rest with preventing or limiting such degeneration as early as possible.

It would seem that some cases, however, when recognized early, admit of a check in their progress—and for years Larrede has insisted upon some recoveries—through energetic and systematic mercurial, and more recently salvarsan, treatment. On the other hand, the writer has encountered cases which have rapidly progressed in spite of the most energetic salvarsan, mercury and nuclein treatment.

Aside from the history and the clinical manifestations of the disease, both of which are more frequently wanting in parasymphilitic conditions than in general infections, sero-diagnostic methods in all of the modifications which may contribute to their accuracy in diagnostic value are of extreme importance.

Unfortunately, the Wassermann reactions have given variable results in all hands, and at times more apparently so. This is best seen when one reviews a group of cases of positive syphilitic infection in which a certain number show a negative reaction.

On studying in the ward of the County Hospital four cases, three of undoubted paresis and one of suspected dementia precox, it was found that the spinal fluids compared as follows:

Case 1—Globulin positive; cell count, 32; Wassermann in spinal fluid negative; in serum, positive.

Case 2—Globulin negative; cell count, 27; Wassermann in fluid negative; in serum, positive.

Case 3—Globulin positive; cell count, 40; Wassermann in fluid positive; in serum, positive.

Case 4—Suspected dementia precox. Globulin positive; cell count, 9; Wassermann in fluid positive; in serum, negative.

The many discrepancies in these four cases indicate how careful one must be as

to placing too much value on laboratory findings alone. That these variations are not uncommon is to be seen in the report of Karpas (*N. Y. State Hosp. Bull.*, v. 5, No. 2), who presents an interesting series of cases of metasyphilis in which 152 consecutive autopsies were done. In group 1 there were 100 cases of general paresis: 72 were fully developed, out of which 49 showed a positive Wassermann in the blood and spinal fluid; 7 gave a positive reaction in the blood, and negative in the fluid; 4 positive in the fluid, and blood not examined; 9 a negative reaction in the blood and a positive reaction in the fluid, and 3 negative in both. The globulin content was present in 66 out of 72. A lymphocytosis was present in all but one of the series.

It is usually believed that the four reactions, viz., the Wassermann in serum and spinal fluid, the lymphocyte count per cu. mm. of spinal fluid and the presence of proteid in the fluid, should be present to establish the unquestionable existence of parasyphilitic disease. This more nearly approaches the truth the more nearly we approach the ideal in technic, as well as in care in the selection of the antigens. Recently, in a lengthy article on the antigens with reference to the superiority of cholesterinized extracts (*Arch. Int. Med.*, December, 1913, p. 660), sufficient variation is shown, even with the most guarded technic, to suggest that all are open to the possibility of error.

The diagnosis then, at the present time, must depend upon (1) a remote or even defective history of a suspicious character, especially between five and twenty years before, bearing in mind that milder infections, as well as insufficiently treated ones, are the most liable to be followed by these sequels; (2) the chronic progressive degenerative character of the process as indicated by the functional

failure of the structures involved and the failure in response to therapeutic measures (including mercury, iodides or the organic arsenical derivatives); and finally, the reactions and abnormal constituents in the blood and spinal fluid.

The interpretation of the four reactions is summarized by Foix and Bloch (*Gaz. d. Hôp.*, v. 85, pp. 1091-1096 and 1127-1131) as follows:

"Wassermann positive in serum; negative in spinal fluid; no lymphocytosis; no albumen reaction; syphilis certain, but the nervous lesion is not syphilitic.

"Albumen positive; lymphocytosis; Wassermann positive in serum and negative in spinal fluid. There is strong probability that the nervous lesion is syphilitic.

"Albumen positive; lymphocytosis; Wassermann positive in serum and fluid. There is certainly a nervous syphilis."

These, aside from the objective and subjective symptoms, are the most important diagnostic elements.

TREATMENT.

So often has one encountered, in the literature and in medical gatherings, reports of recovery from locomotor ataxia and general paralysis that one is led to suspect that such reports lack the most important feature—correctness in view or opinion. At the present time one is about as reluctant to believe in recoveries as one has been in tuberculous meningeal infections.

It is obviously true that whatever therapeutic measure may prove effective in exterminating the organism of syphilis or destroying its toxins, it can in no way reconstruct those tracts of nerve fibres which have been replaced by connective tissue; nor can it replace the brain cells which have been shrunken and atrophied and, to a great extent, exterminated by connective tissue proliferation.

It is then quite evident that, with refer-

ence to the diseases we may still refer to as parasyphilitic, there will always be a strict limitation to what might be termed a cure.

While there still remains much enthusiasm over salvarsan and its successors, it must be admitted that this has receded extraordinarily from the sterilizans magna position which it at first maintained. Salvarsan has been conspicuously ineffective in all forms of parasyphilitic disease, having no more than a slight retarding effect, with possibly slight remission similar to that which is not infrequently observed during energetic mercurial treatment. It is well to add that owing to the catalytic action of the iodine, remissions have frequently followed the use of iodide of potash, because of its influence upon the proliferation processes.

The latest mode of application of salvarsan is that of Swift and Ellis (*Arch. Int. Med.*, Sept., 1913, p. 331), in which the serum of the patient is removed after an hour from the time of the injection of the drug, diluted to 40 per cent strength with normal saline solution, and injected into the spinal canal. This method would seem to offer the best means yet devised for overcoming the inaccessibility of the organism. The authors named first reported finding that the serum of patients who had been treated intravenously with neosalvarsan had a definite spirocheticidal action on the *Spirochaeta duttoni*. The results of the plan, as expressed by a number of observers at a recent meeting of the New York Neurological Society, were uniformly good. After the first injection the symptoms were aggravated in most cases, while usually after the third injection the symptoms improved, rarely the knee jerks returned, but the pupillary rigidity remained. It is well known that the organism lies at a considerable distance from the cerebro-spinal fluid in these cases, e. g., amongst the dense fibres

in the cortex of the brain, to which very small amounts of cerebro-spinal fluid and less of blood have access. It has further been demonstrated that these arsenical preparations may be given to the point of tolerance, either intravenously or subcutaneously, without being detectable in the cerebro-spinal fluid. Ullmann (*Wien. Klin. Wochenschr.*, No. 4, 1912) was also unable to find arsenic in the brains of animals injected with salvarsan. H. A. Cotton, however, in the meeting above mentioned, stated that in two cases of paresis treated by the intraspinal method which came to autopsy, salvarsan was found in the ventricular fluid.

It is not the desire to belittle here the good effects of salvarsan, although from the neurologic viewpoint one may feel that there is too frequently a false sense of security established in the syphilitic, akin to that which proceeded from Hot Springs some years ago, leading, through ineffective or insufficient treatment, to the development of many of the cases of metasyphilis in after years.

Sufficient time has hardly elapsed in the cases treated with salvarsan for parasyphilis to make its appearance, and a negative Wassermann reaction following treatment is not absolute in negating its possible occurrence.

In this connection Nonne (*Deutsche Zeitschr. f. Nervenheilk.*, 1912, v. 43, p. 166) has to say, "One of the most important tasks in the future will be to collect material to answer the momentous question as to whether early salvarsan treatment will protect the patient against syphilitic disease of the nervous system later in life. Our present knowledge does not enable us to give an opinion."

The same authority in enumerating his conclusions regarding the therapeutic results of salvarsan says, "Treatment of tabes and parietic dementia with salvarsan is not harmful."

In the discussion of Nonne's paper Oppenheim is quoted as saying, "In tabes and parietic dementia the positive value of salvarsan treatment is very small. In most cases the patients are uninfluenced, and not rarely the remedy has a harmful effect, as the disease immediately, or soon after the treatment, progresses more rapidly or presents new symptoms." With a certain diagnosis of tabes or parietic dementia Oppenheim does not consider salvarsan indicated.

The chief purpose of this communication—to present the status of neurologic opinion regarding an isolated group of nervous disorders having syphilis as a foundation, but differing from all other manifestations—having been satisfied, it remains to maintain that, until sufficient reason is shown to the contrary, the distinguishing term meta- or parasyphilis fulfills a good purpose and should be retained. It is apparent that the whole question calls for earnest, unbiased research work before much gain can be expected, and the greatest promise is undoubtedly in the field of prophylaxis, not only against syphilitic infection, but more especially against the factors which determine parasyphilis after syphilitic infection has occurred.

325 Mack Building.

THE MANAGEMENT OF SIMPLE FRACTURES.*

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DENVER.

The treatment of fractures, while not always endued with the interest or freshness of the latest fads in medicine and surgery, is, nevertheless, of perennial concern to the surgeon and the general practitioner. No matter how great his skill

and how wide his experience, each particular case becomes a grave responsibility and is accompanied by disquieting anxiety. He may lose an operative case and bear the loss with stoic composure, sustained by the thought that he had done what was indicated and done it perhaps as well as another; but not so with a fracture. He must not fail to obtain a good result and must have no untoward complications. How, otherwise, can he exonerate himself or "defense prefer"? Such is the usual attitude of the laity; such, alas, too often that of a court and jury; and such the stern judgment of his own conscience, however extenuating the circumstances. He applies his cast or splints or extension and is haunted by the specters of an imperfect reduction, redisplacement, non-union, a nerve injury or a Volkmann's paralysis. No common injury entails a greater responsibility or causes more anxiety to the medical attendant. Hence the periodic revivals of interest in the subject and the eagerness with which new methods of treatment and new aids to diagnosis are welcomed by the profession.

The Roentgen ray has been a godsend and similarly the open operation with mechanical methods of reduction and fixation, and, as a last resort, autoplasmic bone transplantations. Roentgen ray plates in two planes at right angles to each other should be taken in every case of suspected fracture or obscure bone injury. The same routine should be repeated after reduction and dressing of the fracture. In cities where satisfactory Roentgen ray work is readily obtained a surgeon is hardly excusable who does not avail himself of so valuable an agency. As in every other resort to their use, the aid of an expert in interpreting the picture adds greatly to their value and prevents drawing erroneous conclusions from certain normal appearances and being misled by apparent exaggerations of deformities.

*Read before the Medical Society of the City and County of Denver, September 15, 1914.

Illustrative of the use of Roentgen ray plates was a recent subperiosteal fracture of the shaft of the ulna, where persistent localized pain was the only clinical sign. The X-ray showed a complete transverse fracture without displacement. Another illustrative case was that of a man of 30 who had jumped from a fourth-story window, landing upon a paved sidewalk. No fractures were diagnosed at the time. Two weeks later, when upon the advice of his physician he began to walk, he suffered from increasing pain and disability in his left hip. Measurements, passive motion, contour and position appeared entirely normal. Suggestive pain was elicited by striking a light blow inward over the great trochanter. A diagnosis of fracture of the acetabular cavity was made, probably of the rim, and an X-ray plate showed a linear fracture through the upper part of the acetabular rim without displacement. Two weeks' further rest in bed, with a Buck's extension, relieved him of pain and disability. Thus, two recent cases in one surgeon's practise illustrate the impossibility of making a diagnosis in certain cases without the employment of the X-rays.

In this paper I shall discuss only simple fractures. As it is manifestly out of place within the limits of this paper to discuss in detail all the simple fractures that are considered in an exhaustive treatise, I shall confine my subject to certain general features, selecting only a few of the more common and important fractures for more or less detailed description. Even the comprehensive discussion of a single fracture like a Colles' or Pott's fracture would extend beyond the limits of this paper, so that I must beg your indulgence for brevity of treatment and the omission of many important features. I shall not detail the various classifications given in systematic treatises as regards the application of the force causing a fracture, the various lines

of fracture and the character of the deformity resulting.

Experiments (Messerer) upon the principal long bones in the fresh condition have shown that the force required to produce a fracture if applied as a crushing force in the long axis of the bone is more than twice as great as if applied as a bending force, and the resistance to a bending force is more than four times as great as a torsion force. Most of the fractures due to indirect violence are fractures where the force is applied in the manner of a crushing force in the long axis of the bones with the added elements of bending and frequently likewise of torsion, e. g., fractures of long bones of the upper extremity by falls upon the hand or elbow, or of the lower extremity by falls upon the feet. Hence the fracture is frequently oblique or spiral. In such fractures there is less apt to be severe laceration of the surrounding soft parts and comminution of the fragments than is usual in fractures due to direct violence, as from a weight, such as the wheel of a vehicle, falling on the limb or passing over it.

I am not the partisan of any method in the treatment of fractures. Obviously, the simplest treatment that will give good functional and cosmetic results is the best. When these conditions cannot be secured by the time-proven methods, operative procedures should be resorted to. Recent improvements in the methods and technique of the open operation for the reduction and fixation of fractures have given much better results than were formerly attained, and warrant a more frequent resort to them in appropriate cases. The fractures that most frequently demand the open operation are those of the patella, olecranon and tuberosities of the os calcis. In fractures of this class, owing to separation of the fragments by muscular action and the interposition of ligamentous and tendinous investments,

perfect approximation and fixation are in most instances impossible, and a fibrous union results, with more or less separation and consequent impairment of function. However, even under the latter conditions, where there is only a narrow fibrous bond excellent results can be obtained. Where the open operation is advisable, satisfactory results can be secured by simply removing intervening soft structures and with chromic catgut or kangaroo tendon suturing the investing tendon or membrane over the surface and at the sides of the fracture. The patella offers special advantages in this respect, since it is a sesamoid bone embraced on its anterior and lateral aspects by the expanded tendon of the quadriceps femoris muscle. Where this procedure is not feasible, fragments may be drilled from adjacent sides so that the holes emerge upon the fractured surface just deep enough to embrace the dense cortex and afford sufficient resistance to the tension of the suture material. Different authorities advocate kangaroo tendon or some form of metal wire as suture material. Because of its tensile strength aluminum bronze wire is the best form of the latter material, being superior in that respect to silver wire. Where a fragment or process is broken off a bone, as in the case of the olecranon, the tuberosities of the calcis, the great trochanter or the head and neck of the femur, or in similar injuries about the upper and lower extremities of the humerus, ivory or bone pegs or metal nails or screws transfixing the fragment and penetrating the part from which it is separated are readily applicable, and afford accurate and firm approximation. Murphy and others make frequent use of ordinary wire nails of suitable length. The head of the nail is cut off and the end of the buried portion should be sunk slightly beneath the surface, so that it may be completely covered by bone. The lines of

skin suture and bone suture should not be in the same plane if this can be avoided, since the irritation of the foreign material may interfere with the healing of the soft parts.

The surgeon's judgment and the circumstances of a given case must determine the best time to operate. A delay of a few days to allow for absorption of traumatic exudate offers somewhat better opportunities for healing and resisting infection; but may render reduction more difficult because of muscular contraction.

Plaster of Paris bandages have a wide adaptability in dressing fractures, in fact, in connection with extension, where demanded, they can be fashioned to suit the needs of almost every fracture of the long bones, either as an encircling cast or in the form of moulded splints. An encircling cast should never be applied to a recent fracture except if it be at once split, and slightly spread to allow for swelling, when a bandage may be applied over it. The fingers or toes should be left uncovered for inspection as to the condition of the circulation. If the pain increases the cast should be at once removed and reapplied more loosely. It may be accepted as an almost invariable dictum that an encircling cast should never be applied to the forearm, for it is in this region that a Volkmann's myositis is most apt to occur with its disabling contractions.

In fractures of the leg I have usually employed the cast in private practice, but I split and spread the cast, so as to allow room for the swelling that must necessarily occur. The advantages of the cast are that the materials are usually available, that it is quickly and easily applied and that it can be accurately adapted to the contour of the limb. The limb should be first invested in a bandage of flannel, Canton flannel or sheet wadding, which also should be split with the cast and serve merely as a lining

for the cast. In addition, all bony prominences should have an additional covering of cotton or soft wool. Special care should be exercised in protecting the region about the head of the fibula to prevent injury to the external popliteal nerve, which passes forward just below the fibular head, otherwise paralysis of the extensors of the foot may result. A satisfactory padding for wooden splints is ordinary oakum, which should be fluffed and evenly spread. A layer of surgeon's lint should be laid upon its surface to protect the skin. It is firmer and at the same time more elastic than absorbent cotton, and does not require frequent renewal. It also holds its shape well after it has once been molded to the limb.

Some form of extension is demanded in oblique fractures with over-riding, or in other fractures where the axis of the bone cannot be maintained or there is a tendency to redisplacement from muscular contraction. With sufficient weight it will frequently accomplish a gradual reduction which could not be secured by manipulation, thus sometimes obviating an open operation, which can still be done later if this simpler method fails. It is generally necessary in fractures of the shaft and neck of the femur, and occasionally in oblique and spiral fractures of the humerus. In the latter case a weight may be suspended below the flexed elbow by adhesive strips applied to the arm in the manner of a Buck's extension, as recommended by Bardenheuer. In the case of the femur, a Buck's extension with suitable modifications generally gives satisfactory results. Abduction is important in fractures of the femoral neck, and to render this more effective it should apply to both limbs. Neff's travois splint, used in Murphy's clinic, accomplishes this and also steadies the pelvis. The double inclined plane is often a desirable modification in fractures of the shaft where the

upper fragment is tilted forward by the action of ilio-psoas and pectineus muscles. Inward rotation and shortening are frequent results in fractures of the femur, together with coxa vara and limitation of motion of the hip joint in fractures of the neck. These conditions, therefore, frequently demand the open operation—Lane's plates for the shaft and wire nails in the region of the head and neck. In small children fractures of the shaft of the femur can be comfortably treated by vertically suspending both the fractured limb and the sound one from a cross piece directly over the bed through the medium of a Buck's extension on both limbs, counter extension being obtained by slightly lifting the buttocks. This makes it easy to keep the child clean, and allows considerable freedom of movement of the body. Judd has recently reported the treatment of a series of cases of old fractures of the femoral shaft with shortening and inward rotation, by exposing the fracture through an external lateral incision, chiseling or sawing through the union obliquely, loosely encircling the overlapping ends with two loops of bronze aluminum wire distant about one-quarter inch from each other, and then applying a Buck's extension. In this manner he has overcome the shortening and inward rotation. Another situation, where gratifying results may be obtained by extension, is in fractures of the metacarpal bones. These fractures are usually due to striking a blow with the fist, and are generally oblique, and will unite with backward angulation and shortening if treated without extension. A simple dressing that has given excellent results is as follows: Apply an adhesive strip along both lateral aspects of the finger, leaving a loop extending beyond the end of the finger. Pad a straight palmar board splint slightly wider than the hand, extending beyond the finger tips and above the wrist, and narrow it

down to conform to the wrist. Apply a broad band of adhesive plaster encircling the wrist and splint. Pass a suitable length of three-sixteenth-inch elastic rubber tubing through the adhesive plaster loop at the end of the finger, bringing the ends together and securing them by wrapping a thread around them and tying, and bring the elastic loop thus formed over the end of the splint with the tension necessary to maintain reduction of the fracture, and fix it to the exposed surface of the splint with a stout tack or screw, applying a bandage to maintain the splint in position.

The clavicle is probably the bone most frequently fractured, Colles' fracture of the radius being its rival for first place. It is generally due to force applied to the point of the shoulder or transmitted from the arm and is usually oblique in adults, frequently transverse in children. The inner fragment is usually drawn upward by the sternocleidomastoid muscle, and the outer fragment is carried inward and backward by the weight of the shoulder. Perfect reduction and fixation by the older methods of treatment is rare. Hence, there is a good argument for more frequent resort to suturing and plating in this particular fracture. However, the Sayre dressing frequently gives good results and is easily applied. In fat women with large breasts the Velpeau dressing may be employed. The important points in applying the dressing are drawing the shoulder well backward and lifting the elbow.

Another fracture that the surgeon is frequently called upon to treat is Colles' fracture. This occurs within the first inch of the lower expanded end of the radius and is through spongy bone. It is due to exaggerated extension from falls upon the hand. The line of fracture is practically always from before backward and upward, and the lower fragment is

displaced upward and backward upon the upper, causing a prominence at the back of the wrist. The lower fragment is also displaced to the radial side of the wrist. Improper attempts at reduction are apt to result in partial reduction with impaction, which is difficult or impossible of correction without exposing the site of fracture and prizing the lower fragment into place. By a proper method of procedure a satisfactory reduction can be effected in almost every instance. The first step in the mechanism of reduction consists in freeing the lower fragment by imitating the force that caused the fracture. There are two methods that have proved efficient. One begins with placing the balls of the thumbs side by side over the posterior aspect of the lower fragment, the axis of the thumbs lying in the long axis of the bone. At the same time the index fingers are crossed underneath from the inner and outer sides respectively supporting the lower end of the upper fragment on its anterior surface. With strong pressure downward, of the thumbs, at the same time carrying the wrist and hand backward, making the fracture site the hinge, the lower fragment is lifted off the upper and forced over its end and then by flexing the hand is carried easily into its proper position. Adduction towards the ulnar side to correct the outward displacement is made while these movements are being executed. The important point in these manoeuvres is the forcible extension, exaggerating the deformity, and thereby freeing the lower fragment from its position. A slightly different method of accomplishing the same result is by grasping the forearm and wrist so that both thumbs are posterior, but one above and one below the fracture in the manner one would grasp a stick to break it, and then going through the same movements as above described. A suitable and readily applied

dressing consists in a moulded anterior and posterior plaster of Paris splint. Some surgeons consider the posterior splint sufficient. If an anterior splint is used it should be well padded or moulded to conform to the anterior curve of the lower end of the radius. The hand should be adducted to overcome a tendency to external displacement. The splint should extend from the elbow to the middle of the fingers. The old Bond anterior splint or the Levis moulded metal splint, if properly adjusted, gives good results.

Analogous to the Colles' fracture in the upper extremity, we have in the lower the Pott's fracture of equal or greater importance. Inefficient treatment usually results in a disfiguring and disabling talipes valgus. Correct treatment demands a knowledge of the nature of the injury and its mechanism of production. It is a fracture of eversion and consists in the separation of a part or the whole of the internal malleolus of the tibia with a fracture of the fibula about two and one-half inches above its lower extremity, and frequently the detachment of a small wedge-shaped fragment from the outer articular surface of the tibia. The foot is displaced outward and backward so that the articular surface of the tibia rests forward upon the neck of the astragalus, and the angle formed by the junction of the superior and external articular surfaces of the astragalus is forced upward like a wedge between the fibula and tibia, carrying before it the broken off fragment of the tibia, if there be one, thus causing a separation of the lower tibio-fibular articulation and widening the interval that normally exists between the two malleoli. The fracture is usually easily reduced by extension and counter-extension and dorsal flexion of the foot. The external malleolus should be pressed inwards, and care exercised to see that the backward displacement of the astragalus is corrected.

A plaster cast may be applied at once, with the foot in strong adduction and dorsally flexed to a right angle with the leg. A fracture box may be used instead of the plaster cast until swelling subsides, and then a cast substituted. If the cast is used at once, it should be split before it sets, and widened to allow for swelling. The cast would best extend from the bases of the toes to half way between the knee and hip.

Fractures of one or both bones of the forearm can usually be satisfactorily treated with anterior and posterior moulded splints, with the forearm half way between pronation and supination. The limb so dressed should be carried in a broad sling extending from elbow to finger tips and so adjusted as to keep the hand slightly elevated above the level of the elbow.

Fractures involving the shafts of one or both bones of the leg, if reduction is satisfactory and can be maintained, are best treated by the use of a plaster cast extending from toes to mid thigh; observing the precautions elsewhere emphasized to prevent pressure from swelling.

The after treatment of fractures, consisting of massage and passive motion, is begun in three or four weeks. The period should be longer where a fracture involves a joint, either by juxtaposition or actual invasion, than in cases of fractures remote from joints. The treatment at first should be brief and applied with extreme care and gentleness every three or four days, later every other day and finally daily. Even from the beginning of the case, at each removal of the dressing, slight friction applied to the skin with a pledget of cotton saturated with alcohol is both grateful and beneficial.

If blebs or ecchymosis are present, a dusting powder with boric acid as its principal constituent should be used after cleansing and gently drying. If infection

threatens, a weak alcoholic solution of iodine may be painted on the surface at the first dressing.

In healthy adults, a firm callus is usually present in from four to eight weeks, somewhat sooner in children. Absorption of excess callus and bony condensation is usually complete in from three to four months. The latter process takes place more rapidly after use of the limb is resumed. Where immobilization is not well carried out more callus is formed and a longer time is required for ossification and condensation.

539 Equitable Building.

News Notes

The Denver Express quotes Dr. Sharpley, superintendent of the Denver City and County Hospital, as referring to the hospital as a "scandalous death trap." The floors and ceilings are flimsily built of wood. The wards have for a long time been so crowded that beds are placed in the aisles. Meantime a committee of large property owners is engaged in deciding where "cheese paring" may be practiced in the Denver city administration.

The Denver city health department has been confronted by the rather unattractive problem of how to provide for the education of forty boys who were excluded from the public schools as diphtheria carriers.

The president of the Colorado State Medical Society has appointed the following physicians as members of the Colorado committee to cooperate with the American Society for the Prevention of Cancer: Dr. T. A. Stoddard of Pueblo, Dr. Phillip Hillkowitz and Dr. R. W. Arndt, both of Denver.

The president of the Colorado State Medical Society has appointed Drs. W. P. Harlow of Boulder and R. W. Corwin of Pueblo to represent the Society at the annual mid-winter Conference on Legislation, Medical Education and Public Health Legislation, to be held in Chicago February 15 and 16, 1915.

Dr. M. S. Chenoweth, who in 1906 was deprived of his license to practice medicine in Colorado, because of the publication of objectionable advertisements, has brought suit against the State Board of Medical Examiners for \$50,000 damages on the ground that they did not comply with a recent order of the Supreme Court that the license should be restored.

A number of Denver physicians have been actively engaged with the baby clinic which is being held every Thursday morning in the meeting hall of the Denver County Medical

Society in the Metropolitan Building. The clinic is intended for the examination of supposedly well babies, so that their mothers may be instructed as to remedying any defects which may be discovered.

Four Glenwood Springs physicians—Drs. Crook, Smits, Frank and Clark—are mentioned as part purchasers of the Glenwood Sanitarium, which has just changed hands.

The residence of Dr. W. F. Farrar of Ophir, Colo., was almost completely destroyed by fire on November 20.

On November 11 Dr. Carroll E. Edson, as a guest of the El Paso County Medical Society, read a paper on the "Interpretation of Cardiac Irregularity."

Dr. G. H. Stover has returned from Honolulu and spent a part of November in Denver. He expects, however, to pass a good deal of the winter season in Florida.

On November 19 Dr. J. W. Ames addressed the Denver Philosophical Society on the "Physical Examination of School Children." The discussion on Dr. Ames's paper was opened by Dr. Mary E. Bates.

At the twelfth annual meeting of the Surgical Association of the Rock Island lines, held in Des Moines, Iowa, on December 2 and 3, Dr. W. C. Bane read a paper on the "Use of the Sideroscope for Detecting Iron in the Eye."

Dr. O. M. Gilbert of Boulder is recovering from a rather severe and painful illness.

Dr. J. M. Halstead of Ridgway, who a short time back underwent an emergency operation for acute appendicitis at the Montrose hospital, died at midnight on the 13th of November. Dr. Halstead was a graduate of a Louisville medical school and had practiced medicine for about ten years.

Dr. Thomas N. Moxon of Salida died at the Rio Grande Hospital in that city on November 8, after a somewhat lengthy illness. Dr. Moxon had given up the practice of medicine for several years. He was 51 years old.

Dr. S. Morgan, formerly an Iowa practitioner, but who had practiced in Denver for the past ten years or so, died on November 23, aged 60 years, after an illness of several months' duration.

Dr. A. E. Greene of La Salle, who was injured in an automobile accident some weeks ago, is reported to be still in a rather serious condition.

Dr. J. D. Gibson has been elected president of the American Association of Clinical Research.

Dr. J. K. Miller, Greelev city physician, has been lecturing to school children and their parents on the requirements of the state law as to the physical examination of school children.

Dr. Philip Hillkowitz was a guest of the Fremont County Medical Society on November 23, when he delivered an address on laboratory methods in diagnosis.

Dr. G. E. Newell, formerly of Dolores, has settled at Buena Vista.

Dr. C. H. Morian, formerly of Omaha, Neb., has decided to locate at Arvada, Colo.

Dr. H. R. Bussey, who was for a short time at Placerville, has now settled at Dolores.

Dr. W. B. Collier has taken over the hospital at Littleton formerly under the control of Dr. A. McGugan.

An operation for appendicitis was performed on Dr. W. N. Caseley on November 28.

Dr. R. L. Downing of Bayfield recently motored into Durango to undergo an operation for appendicitis by Dr. Turrell.

Dr. C. V. Bates has located at Ouray, Colo.

Dr. Horton, formerly of Hooper, has moved to Gunnison, and has been succeeded by Dr. Jones of Salida.

Dr. Miller has succeeded to the practice of Dr. Doane of Del Norte.

Dr. Van Sands of Alamosa recently underwent an operation for appendicitis by Dr. Roe of Denver.

Dr. Callahan, formerly of Manassa, has located at Saguache.

Mrs. McCleary, wife of Dr. E. O. McCleary Ordway, Colo., died at her home in Ordway on November 9th, aged 24 years. She leaves two children. Dr. McCleary and his wife came to Ordway in January, 1910.

Dr. D. L. Fitzgerald, who recently removed from Hartman to Nebraska, has returned to his former location.

Dr. L. P. Barbour, located for many years at Rocky Ford, has changed his location to San Diego, California.

Dr. C. H. Farthing, who has been located at La Junta for the past eight years, has removed to Meeker, where he will succeed Dr. R. C. Montgomery. Dr. Montgomery will go to Lamar.

Colorado Springs Notes.

Dr. Chas. O. Giese recently toured the northern part of the state by auto. On the trip he visited the cities of Denver, Fort Morgan, Sterling, Fort Collins and Cheyenne, Wyoming.

Dr. H. C. Moses recently spent several days in Denver on business.

Drs. E. L. Timmons and W. A. Campbell attended the meeting of the Shriners in Denver the last of November.

Dr. Albert H. Peters and Miss Edith Crabill of Colorado Springs were married in Pueblo November 20th.

Dr. Thomas L. James has opened an office in the Burns building.

Dr. S. W. Schaefer, formerly house physician at the Glockner sanitarium, has opened an office in the Exchange Bank building.

Dr. W. H. Hombach of Colorado Springs has moved to Grand Island, Nebraska.

Mr. Crouch, father of Dr. John B. Crouch, physician to the Union Printers' Home, Colorado Springs, died recently in Bethel hospital.

Among those who motored to Denver recently were Drs. L. H. McKinnie, J. A. Patterson, G. B. Gilmore and A. A. Blackman.

Dr. P. M. Lennox did post-graduate work in Chicago last month.

Dr. and Mrs. S. C. Morrison will spend Christmas with the doctor's mother at Fayette, Missouri.

Dr. W. N. Caseley of Colorado Springs recently underwent an operation for appendicitis.

Dr. E. B. Fanning of Colorado City was con-

victed in police court on a charge of failure to report cases of contagious diseases.

Arrangements have been made by which the school children of Colorado Springs will be furnished with free dental treatment at a dental clinic which will be open three days of each week.

Pueblo Notes.

Drs. J. J. Pattee and H. A. Black were visitors to Denver on the 3rd, instant, attending the annual banquet of the Denver Rotary Club.

Dr. W. F. Rich has been detained from his professional duties by an infected eye.

Dr. J. F. Snedic has taken up the practice of medicine in Pueblo. He is located with Dr. Luke McLean in the Central Block.

The annual banquet of the Pueblo County Society will be held the third week of December.

The annual election of officers will be held the first meeting in January.

Constituent Societies

BOULDER COUNTY MEDICAL SOCIETY.

The Boulder County Medical Society met at the Physicians' Building Thursday evening, Nov. 12th, at 7:30 p. m. The meeting was called to order by President C. Gillaspie.

Malignant Edema of the Leg.

A case of malignant edema of the leg was reported by Dr. W. W. Wasson. The patient, a young university athlete of good constitution, had had several fractures. Recently he sustained a compound fracture of the leg at the junction of the upper and middle third. The upper end of the lower fragment was driven out through the flesh. Dr. Wasson found wet towels about the wound, but he cleansed it with a weak phenol solution and put on a dry bandage.

The leg was put in a box splint and the patient taken to the University Hospital. The leg was operated upon that evening at 8 o'clock. The leg was put in a splint and the patient put to bed. An unusual amount of swelling was present the first day. The circulation in the foot was poor. Tibial pulse was absent. Temperature, pulse and respiration were good the next day. The pain was severe and required five to six hypos per day. Temperature and pulse gradually increased up to the fifth day. The wound, however, had a good appearance.

The pain in the foot became more severe and the skin blanched at the end of the fifth day. The dressing was removed to relieve the pressure. No circulation in the arch and toes, but the ankle was better.

On the sixth day there was discoloration in the ankle. Two hours later the discoloration extended to the wound. A foul odor was present. The swelling and discoloration spread rapidly. The limb was amputated immediately just below the thigh. The temperature today was much better. Recovery would be slow.

No manure has been placed on Gamble field this past summer, but the bacillus of malignant edema must have reached the field in this manner.

Dr. Tom Walker, Department of Pathology, University of Colorado, had found reports of fifty cases of malignant edema in the literature. The bacillus of malignant edema was present in this case. It is found normally in the intestines of horses. The spores are very resistant. The germ is anaerobic.

This bacillus is one of three which bear spores and are pathogenic for man. Dr. Walker made a further differentiation between this and other bacilli which may be confused with this one. He showed illustrations of the bacillus of malignant edema, tetanus and Welch's gas-producing bacillus. The last one does not show a spore in the stains. The staining methods were explained.

Mallory and Keen give very little concerning the pathology and Adams gives nothing. Necrosis follows exposure to the toxins of this bacillus. Extravasation of blood into the tissue is very marked; hence so much discoloration and swelling. Decomposition with the formation of gas soon follows. Gas bubbled from the discharge from the amputated limb for some time after its removal.

Dr. Walker showed an arm, removed last summer in Denver for the same disease. Death came fifty-four hours after the fracture. He showed the leg of the present case with the wound in the leg, bluish discoloration, bleb formation, etc.

Dr. O. M. Gilbert discussed the medical aspects of the case. He stated that clinically it is malignant edema. Pasteur discovered the organism. Other germs may produce a similar condition. Clinically the distinction cannot be made as to the exact etiology. It has been reported that a patient may have his wound infected from his own intestines, but this statement is doubted. Some bacteremia must always be present, and this determines, to a great extent, the recovery. Large quantities of liquid must be given to keep the kidneys active. This patient was given saline by the rectum, etc., before he left the operating table.

Dr. L. Freeman has reported a case in Cheyenne which proved fatal on the tenth day. This present case is the second one in the history of the University Hospital during the seventeen years since it was built.

Dr. W. W. Reed spoke of the surgical aspects of the case. Potassium permanganate 1-6000 was used in wet dressings constantly on the wound. Intravenous injection of saline has been recommended, but this patient has retained saline so well by rectum, that intravenous injection has not been necessary.

Dr. O. M. Gilbert emphasized the importance of very early recognition of this disease in order to prevent fatal termination.

Dr. W. A. Jolley reported a case seen, while a medical student, with his preceptor. The patient had been injured in a mill. Amputation was refused by the boy's parents. Amputation

was resorted to too late, as a result, and the termination was fatal.

Dr. W. W. Reed stated that the toes first showed the blocking of circulation, later the instep and then the ankle, etc. The vessels behaved as if plugged.

Dr. G. H. Cattermole spoke of a case seen here seventeen years ago. The man was a farmer. He injured his great toe and the wound closed. Swelling came on the second day. The infection proved fatal the third day. The temperature was not high, but the toxemia was great.

Dr. Gilbert thinks the blocking of the circulation in these cases is purely mechanical. The bacillus of tetanus is often introduced with that of malignant edema.

Dr. Clay Giffin suggested that some means of keeping the field cleaner should be resorted to, such as covering it with straw and burning this off. Dr. Jolley suggested adding crude oil.

Dr. C. Gillaspie reported the case of a boy who had been injured in a runaway by having a wagon bed strike him in the abdomen. Pain came on the second day, but no vomiting, except of some blood immediately after the injury. The second day the abdomen was rigid and the pain was severe. Upon opening the abdomen a perforation or rent in the pyloric end of the stomach was found, with the stomach contents in the free peritoneal cavity. The patient died twenty minutes after leaving the operating room.

The post-mortem findings confirmed the operative findings. No other ruptures were present in the alimentary canal and the kidneys were negative.

Dr. O. M. Gilbert emphasized the subnormal temperature, pulse of fifty, rigid abdomen wall, and leucocyte count of 4,000. He stated that intra-abdominal hemorrhage might be confused with gastro-intestinal rupture. It was very hard to exclude hemorrhage in Dr. Gillaspie's case. Dr. Gilbert mentioned Dr. Reed's case of ruptured spleen seen last winter. There should have been fever and leucocytosis after twenty-eight hours in Dr. Gillaspie's case.

Dr. W. A. Jolley spoke of a case seen three years ago, of a ruptured intestine after a kick from a horse.

Dr. Jolley also made a brief report for the local Red Cross Society. A local society is now being formed. A full report will be given later. The present membership is now seventy-five in Boulder. Eighty dollars has been sent to Belgium. Dr. L. M. Giffin emphasized again the importance of doing all we can to aid the Red Cross Society and spoke at length concerning suffering Europe.

Dr. Gilbert brought up the question of a visiting nurse in Boulder.

The society adjourned to meet Thursday evening, November 19th.

F. R. SPENCER, Secretary.

The Boulder County Medical Society met at the Hotel Boulderado, Thursday evening, December 3 at 7:30 p. m. Sixteen members were present. The meeting was called to order by Dr. C. Gillaspie, president.

The paper of the evening was by Dr. G. E. Neuhaus upon "Treatment of Lues of the Central Nervous System."

The scientific program was preceded by a dinner at the Hotel Boulderado at 6 o'clock. Dr. Neuhaus was the guest of the Society.

The Society extended a vote of thanks to Dr. Neuhaus for his interesting paper.

Dr. Neuhaus' paper was discussed by Drs. C. E. Giffin, G. H. Cattermole, F. H. Farrington and E. B. Queal.

Mr. Jas. Stovall of the Aetna Life Insurance Co. gave a brief address. He limited his remarks to liability insurance. A sample copy of the liability policy, Form A, was left with the secretary for the use of the members.

Dr. F. H. Farrington moved that the chair appoint a committee of three to investigate this insurance and report at a future meeting. Seconded by Dr. C. E. Giffin. The motion carried.

A letter from the secretary of the State Society was read. The bills for the past month were allowed.

The Society voted to reinstate Dr. R. E. Morris for 1915. The secretary was instructed to send best wishes of the Society to him with his receipt.

Upon the motion of Drs. C. E. and L. M. Giffin, the Society voted to recommend and indorse Dr. E. B. Trovillion for the office of state food commissioner. The secretary was instructed to write Governor-elect George Carlson and also have Drs. Work, Packard and Epler write him.

F. R. SPENCER, Secretary.

EL PASO COUNTY MEDICAL SOCIETY.

The regular monthly meeting of the **El Paso County Medical Society** was held at the Antlers hotel on October 14th at 8 p. m. Thirty-five members were present.

The application of Dr. Thomas G. Corlett for membership in the society was read and laid over until the next meeting for action.

Dr. Lloyd R. Allen read a paper on "Hyperemesis Gravidarum," which was freely discussed by Drs. Morrison, Mayhew, Martin, McClanahan, J. H. Brown, Swan and Trossback.

Dr. E. L. Timmons read a paper on "Obscure High Fever in Children." Discussed by Drs. McClanahan, Martin, Boyd, Webb and Giese.

City Commissioner of Health Mr. Botts was present at the meeting and made a few remarks in which he asked for the hearty co-operation of the society in the work of his department in Colorado Springs.

Dr. Martin, chairman of the Committee on Municipal Hospital for Care of Contagious Diseases, reported that several meetings had been held and that some progress was being made. The mayor's budget for next year contains a small appropriation for the hospital. It was voted by the society to give all aid possible to this committee.

The society then adjourned to the dining room where lunch was served.

G. B. GILMORE, Secretary.

The regular monthly meeting of the **El Paso County Medical Society** was held at the Antlers hotel on November 11th, 1914, with Dr. Carroll E. Edson of Denver as guest of the society.

Dr. Charles O. Giese, president of the society, being out of the city, Dr. J. F. McConnell, vice president, presided.

Dr. Thos. G. Corlett was elected to membership in the society.

Dr. C. E. Edson read a very interesting paper on "The Interpretation of Cardiac Irregularity," showing several drawings to illustrate the different points of the paper. The paper was freely discussed, and Dr. Edson was given a rising vote of thanks by the society for his most excellent contribution to our program.

Dr. H. C. Moses read a very complete and interesting paper on the "Present Status of Roentgen Therapy."

G. B. GILMORE, Secretary.

PUEBLO COUNTY.

The **Pueblo County Medical Society** met in regular session November 17, 1914, President Singer presiding.

Dr. H. A. Lord presented an excellent paper on "Ante and Post-operative Abdominal Adhesions," which was much appreciated and freely discussed.

It was moved and carried that a committee of five be appointed to revise the fee bill. Appointed on this committee were Drs. Robe, Epler, Elder, Adams and F. M. Heller.

J. H. WOODBRIDGE, Secretary.

The **Pueblo County Medical Society** met in regular session December 1, 1914. President Singer being absent, Dr. Crum Epler was elected president pro tem.; Dr. C. V. Marmaduke was elected secretary pro tem. until the secretary arrived.

The censors made their report on furnishing the Society hall with lights, linoleum and chairs. The report was received and the censors were authorized to secure the furnishings.

Since Dr. Fugard was unable to present his paper as scheduled, because of absence from the city, the time was utilized with reports of clinical cases.

Dr. J. W. Needles reported a case of stomatitis ulcerosa, or Vincent's angina, affecting the gums all around the teeth. The condition is characterized by acute onset, very severe pain, foul breath and grey necrotic membrane at the margin of the gums. Treated with saline cathartics, irrigations of antiseptic solutions, tincture of iodine and emetine hydrochloride, both locally and hypodermically, in two weeks recovery was almost complete.

Dr. H. M. Thompson reported a very unusual case of chorioretinitis in an otherwise healthy man of 47 years, with the field and central vision altogether out of proportion to the extensive pigmentation of the retina. History and reactions were negative.

Dr. Thompson also reported two cases of optic neuritis—one secondary to varicella, the

other resulting apparently from a malignant tonsillitis, as cultures from throat swabs showed no diphtheria bacilli. Both cases recovered normal vision under eliminative treatment.

J. H. WOODBRIDGE, Secretary.

LARIMER COUNTY MEDICAL SOCIETY.

Regular meeting December 2, 1914, in the Y. M. C. A. building, Fort Collins. There were present: Drs. Hoel, McHugh, S. C. Halley, Taylor and Stuver. The program of the evening—the election of officers—was carried out with the following results:

W. A. Kickland, president; T. C. Taylor, vice president; E. Stuver, secretary; T. C. Taylor, treasurer; George L. Hoel (for three years), censor; F. J. McHugh (for two years), delegate to State Medical Society; S. C. Halley, alternate delegate to State Medical Society.

The Board of Censors now consists of Dr. Kickland 1915, Dr. McHugh 1916, and Dr. Hoel 1917. After a discussion on the best methods of promoting the interests of the society the meeting adjourned.

E. STUVER, Secretary.

OTERO COUNTY MEDICAL SOCIETY.

The Otero County Medical Society met in regular meeting at the Santa Fé Hospital, November 10, 1914.

Present: Drs. Pollock, Finney, Blotz, Johnston, Lawson, Savage, Farthing, Brunk, Maier, A. L. Stubbs, Jessie Stubbs, Kearns, Hall and Moore.

The president was authorized to appoint a committee to write a resolution relative to the departure of Dr. Barbour for California, and Dr. Farthing for Meeker, Colorado.

Drs. Finney, Lawson and Moore were appointed on this committee.

Dr. J. A. Lawson presented the subject "Gall Stones." He gave a good outline of the subject, especially in regard to etiology. The discussion was very interesting and general.

The committee on resolutions reported as follows:

"Resolved that this society regrets very much that it is to lose Drs. L. P. Barbour and Chas. H. Farthing as members of the society, and that it takes pleasure in recommending them as honest and capable physicians.

"During their membership in this society they have been active in working for the good of the society and of the profession in general

"We shall miss them, and hope that wherever their lot is cast they may receive the handshake of welcome that they deserve.

"During his residence here, Dr. L. P. Barbour has gained the reputation of being the most proficient sanitary scientist in Southern Colorado."

The society adjourned to meet at the Santa Fé hospital for the next regular meeting.

R. M. POLLOCK, President.

W. M. MOORE, Secretary.

SAN LUIS VALLEY MEDICAL SOCIETY.

The San Luis Valley Medical Society met at the office of Dr. Herriman in Alamosa on Wednesday evening, November 4th. President McFadzean being absent on account of sickness, Dr. Davlin acted as chairman of the meeting. Dr. Trueblood was asked to report his visit to the State Society as delegate. W. W. Covelle of Blanca and J. T. Jones of Hooper were elected to membership.

Dr. Trueblood read a paper on Dystocia. His paper consisted of histories and reports of several personal cases and the treatment used. He cited freely both failures and successes. His cases included contracted pelvis, ante-partum hour-glass contracture, encephalomeningocele, placenta previa, and eclampsia. He advocated the giving of spigelia to produce nausea in hour-glass contraction. Three doctors present had performed Cæsarian section. They were Drs. Pollock, Davlin and Coville.

Dr. Richmond and Dr. Baca were to have read papers but both were compelled to be absent.

Dr. Herriman read a paper on anesthesia. His conclusions were: That ether is the anesthetic of choice on account of its safety and range of usefulness; that getting the patient started right mentally is half the battle; that an even, smooth method of administration should be used, not allowing alternate deep and light anesthesia, and that the knowledge of the depth of anesthesia was most important and could only be learned by experience. A plea was made for more frequent use of local anesthesia. Dr. Herriman also discussed the subject of acidosis. After the meeting the members present were entertained at a luncheon at the home of Dr. Herriman.

The next meeting will be held in January at Monte Vista.

Those present were Drs. Trueblood, Pollock, Crawley, Miller, Jones, Covelle, Davlin and Herriman.

WELD COUNTY MEDICAL SOCIETY.

The regular meeting of the Weld County Medical Society was held Thursday evening, October 20th, 1914, President G. R. Pogue in the chair. Routine business being disposed of, Dr. Thompson made a report on the condition of Dr. Law, whose health has been failing for some months. Dr. Law is one of the Fathers in Israel, having located in Greeley in '70, his field work at that time taking him from Cheyenne to Denver and close to the eastern boundaries of the state. The Society was sorry to hear of his poor health. Dr. J. G. Hughes, who was delegate from Weld County at the Boulder meeting of the State Medical Society, made a verbal report of the business transacted. He alluded to the medical library in Denver and its possible uses to the rural physician. He gently reprimanded those of the County Society who had failed to appear at the Boulder meeting, Weld County having seventeen members registered, when the officials had looked for at least twenty-five. The Society request-

ed the secretary to record the hearty appreciation of the members of the **Weld County Medical Society** for the hospitality that had been shown them during their visit to Boulder, and likewise to express their special appreciation for the kindly efforts and accomplishments of the president, Dr. O. M. Gilbert.

The committee appointed to further the candidature of Dr. Work reported that a vigorous campaign was being conducted and stated that the returns in Weld County would be favorable to Dr. Work.

Dr. J. G. Lehan reported that Dr. Wood, who had had a serious accident early in the spring, was now able to navigate by means of a crutch and cane; further that he had set an example to his associates by a full attendance at the Boulder meeting.

After a report of medical cases and review of medical progress for the month, the Society adjourned.

CHARLES B. DYDE,
Secretary.

COLORADO OPHTHALMOLOGICAL SOCIETY.

The regular monthly meeting of the Society was held on October 10, 1914, in the office of Dr. D. A. Strickler, Empire building, Denver. Attendance, 18.

Dr. Bane presented a youth whose left eye had been struck by a dead branch of a tree. The cornea had been perforated, the lens penetrated and the iris cut. The eye was doing well under atropine and dionine, with pressure bandage.

Dr. Bane presented a man whose left eye had been injured, apparently by a piece of steel from a screw driver, although the point of entrance could not be made out. Cyclitis had developed a week after the injury, but had subsided, giving vision of five-fifths at the end of three weeks. Fifty days later vision began to fail, and although there was no congestion the vision was now five-twentieths. After X-ray examination a piece of steel was removed with the magnet.

Dr. Black presented a woman whose symptoms had included night blindness, photophobia and photopsia, with latterly a complete ring scotoma around the fixation point. The diagnosis was probably atrophy of the retina.

Dr. Spencer presented a case in which diplopia secondary to tenotomy of the right superior rectus muscle had been remedied by musculo-capsular advancement.

Dr. Jackson presented a case of polycythemia, with a description of the appearance of the fundus.

Dr. Jackson presented a case in which a sharp blow with a board on the left side of the head had been followed by almost immediate loss of vision, probably from intraocular hemorrhage.

Dr. Black reported a case of bilateral glaucoma, in which the Elliot trephine operation had been followed by permanent reduction of tension, in the right eye almost immediate, but in the left only beginning some days after the operation.

Dr. Neeper reported a case of corneal leucoma, in which breaking down of the epithelium had exposed a rather large calcareous deposit. This had been removed.

Dr. Strickler presented a case in which frontal sinusitis had given rise to orbital cellulitis. There had been proptosis and diplopia, and severe pain referred to the eye. Free incision of the orbital tissues had given vent to thick creamy pus. Recovery was uninterrupted after a complete Killian operation by Dr. Levy.

WILLIAM H. CRISP,
Secretary.

The regular monthly meeting of the society was held on November 21, 1914, in the offices of Dr. H. R. Stilwill, 206 Metropolitan building, Denver. Attendance, 25.

Dr. Boyd presented a patient on whom sclerocorneal trephining had been done for increased ocular tension. The tension had only fallen from 66 to 49 mm. of Hg., although apparently first-class drainage had been obtained. The persistent high tension was perhaps due to iridocyclitis.

Dr. Boyd also presented a man who had a congenital fistula of the right lacrimal sac, which had been treated with the actual cautery.

Dr. Robinson presented a case of so-called Vossius lens ring. The patient's left eye had been struck a sharp blow by a broken drill punch. At the normal position of the pupil there was a faint ring on the anterior surface of the lens, although the pupil had been dilated with atropin very soon after the injury occurred.

Dr. Ringle reported a case in which without cycloplegia the patient had subnormal vision which was raised to normal by minus lenses; and although a low plus sphere was accepted under homatropin, the vision was again subnormal with any but minus lenses after recovery from the cycloplegia.

Dr. Jackson showed a plate, illustrating a paper in the *Klinische Monatsblätter für Augenheilkunde*, of a choroidal sarcoma which had broken through the undetached retina into the vitreous.

Dr. Jackson, referring to the changes in the retinal vessels accompanying high blood pressure, read the first communication on the subject made by Marcus Gunn to the Ophthalmological Society of the United Kingdom in 1892.

Dr. Patterson reported the case of a man of 56 years whose vision had fallen to 6-24, clearly as the result of recent excessive indulgence in tobacco smoking. This was an unusually late age for tobacco amblyopia to manifest itself.

W. H. CRISP, Secretary.

In Ohio recently four men were suffocated by jumping down into a layer of carbon dioxide gas which had accumulated above the silage in a silo, below the level of an open door by which they entered.

Book Reviews

Local and Regional Anesthesia, including Analgesia. By Carroll W. Allen, M. D., of Tulane University, New Orleans, with an introduction by Rudolph Matas, M. D., of Tulane University, New Orleans. Octavo of 625 pages with 255 illustrations. Philadelphia and London: W. B. Saunders Company, 1914. Cloth \$6.00 net; half morocco, \$7.50 net.

The use of local anesthetics is increasing with marked rapidity, and their use is bound to grow in favor with the discovery of anesthetic agents of little or no toxic effects, together with our increased familiarity with the simple technic required to obtain satisfactory results.

Dr. Allen has gathered from the literature on the subject a vast amount of information, and this together with his own knowledge and that of Professor Matas has been very instructively presented in this work.

The various anesthetic agents are listed together with their comparative value and toxicity. The principles of technic are thoroughly described. The illustrations, of which there are many, are highly instructive in showing the manner of anesthetizing areas for numerous surgical procedures.

A more intimate knowledge of what can be accomplished under local anesthetics will surely lead to their more extensive use. Dr. Allen goes far in showing what can be done with these agents. The different forms of hernia for example, according to Dr. Allen, are easily treated by this method. "There is probably no commonly performed major operation that is more inviting to local or regional methods of anesthesia than inguinal herniotomy. This is so on account of the superficial position of the parts, the anatomic arrangement, and the course and distribution of the nerves involved."

By following the technic given, it is claimed that any of the ordinary operative procedures for hemorrhoids, fistula, polypi, ulcers, fissure or resection of the rectal mucosa for prolapse can be quite satisfactorily and painlessly performed.

Many gynecologic operations, including perineorrhaphy and anterior colporrhaphy, are satisfactorily done by this method.

Of the many advantages of local over general anesthesia, one upon which particular emphasis is laid is the absence of vomiting, which if prolonged or severe may compromise the results of the operation by loosening sutures, and so favor a recurrence of the trouble.

C. P.

A Manual of the Diseases of the Nose, Throat and Ear. By E. B. Gleason, M.D., Professor of Otolaryngology in the Medico-Chirurgical College, Philadelphia. Third edition, thoroughly revised. 12mo. of 590 pages, 223 illustrations. Philadelphia and London: W. B.

Saunders Company, 1914. Cloth, \$2.50 net.

This book embraces the subject of nose, throat and ear in a condensed form. To earlier editions are added the latest developments in this branch of medicine. It compares very favorably with more voluminous works and is not lacking in detail or clearness.

More space is given to diagnosis and treatment than to the rare and difficult operations which the beginner should not encounter. However, these operations are described sufficiently for the practice of them upon the cadaver. This method of study is of the greatest value to the student and to practitioners taking a post-graduate course in laryngology and otology.

The chapter on tonsils and adenoids briefly covers the various operations and describes the method which in the experience of the author is the simplest, quickest, easiest and most free from risk and yields the best results. He recommends, however, that the beginner should acquire as soon as possible the technique best suited to himself, and not abandon it without good reason.

The chapter on diseases of the internal ear is completely up to date, and a clear description of the intracranial complications of aural diseases is given.

The formulae at the end of the book give the latest and best remedies of a medicinal character. The various methods of using cocaine, adrenalin, etc., are also carefully described.

This volume will be of the greatest value to the general practitioner and student, and will be much appreciated by the busy specialist.

W. C. F.

Recreations of a Physician. By A. Stuart M. Chisholm; G. P. Putnam's Sons, New York and London; 1914.

Dr. Chisholm offers a most attractive and readable book which is the result of leisure moments spent in the fields of general and medical literature. He has gathered together many interesting facts, and his comments and observations are both instructive and entertaining. It is pleasing to follow his rather random sketches on medical and other topics. His remarks on Specialization are sound, and in the essay on the Inherent Spirit of Medicine he breathes the high ideals all medical men should cultivate. His cursory review of Medicine in the Seventeenth Century is particularly interesting and brings home to us the difficulties and dangers our medical forbears encountered in the pursuit of original investigation and the pronouncement of new thought and doctrines. In his last chapter the author gives an excellent resumé of the development and progress of preventive medicine, which has grown to such large proportions as the result of Pasteur's labors and our increasing knowledge of the etiology of disease. Dr. Chisholm has evidently found pleasure and recreation in the writing, and his readers will find useful information, with entertainment for leisure hours, in his rather rambling sketches.

W. A. J.

Atmospheric Air in Relation to Tuberculosis; with 93 Plates; by Guy Hinsdale, A. M., M. D., Hot Springs, Virginia, Secretary of the American Climatological Association, etc., etc. Smithsonian Miscellaneous Collections, vol. 63, No. 1; City of Washington, Published by the Smithsonian Institution, 1914.

This very valuable essay is one which was awarded a prize from the Hodgkins Fund in connection with the International Congress on Tuberculosis held in Washington in 1908. The rapid progress made in the anti-tuberculosis movement throughout the world in the last five years has, says the author, rendered necessary some changes in the essay as originally presented. In addition to its 136 pages of text, the volume contains a great number of beautiful illustrations. Beginning with a general review of the questions involved, the author discusses the value of forests; the influence of sea air, and of inland seas and lakes; the influence of compressed and rarefied air of high and low atmospheric pressure, and of altitude; the influence of increased atmospheric pressure and condensed air; artificial pressure as produced by various methods, and the use of breathing exercises; the advantage of fresh air schools for the tuberculous, and the general question of ventilation; the effects of exercise in tuberculosis, with special reference to systems of graduated labor; and special devices for the fresh air treatment of tuberculosis, such as tents, sleeping porches, and sleeping canopies. One of the most fascinating chapters, as well as one of the most interesting groups of illustrations, relates to the use of graduated labor; the effect of exercises on the opsonic index of patients suffering from pulmonary tuberculosis being dealt with in relation to the work of Dr. Patterson, Mr. Inman, and Sir Almroth Wright.

RESUSCITATION FROM MINE GAS.

The affinity of CO for hemoglobin is between two and three hundred times as great as that of oxygen for hemoglobin. The hemoglobin combined with CO can not transport oxygen, and the subject is thus brought into a state of partial suffocation. If before death supervenes the subject be brought into an atmosphere free from CO the combination between the gas and the hemoglobin immediately begins to break up, and this change is more rapid if pure oxygen is breathed. In CO poisoning a large per cent. do not recover, and others may die during the next few days or weeks, or may continue to live with impaired sight or disturbed mentality. This is due to the insufficient oxygen supply during the time that the person was breathing CO, with resulting destruction of the nerve elements.

A committee appointed by the Bureau of Mines to investigate this subject makes the following recommendations and statements:

In cases of "gasing," remove the victim at once from the gaseous atmosphere. Carry him quickly to fresh air and immediately give artificial respiration. Do not stop to loosen clothing. Every moment of delay is serious.

The Sylvester method of artificial respiration is inferior to the Schaefer method. Promptness is necessary, because life persists only a few minutes after breathing stops. The removal of foreign bodies from the mouth must not be forgotten. The artificial respiratory movements should not exceed fifteen to eighteen per minute.

The pulmotor and the Dr. Bart apparatus, instead of assuring artificial respiration, may interfere greatly with its efficiency, because the mechanism is liable to cut off respiration prematurely. The suction action which accomplishes expiration may prove dangerous if used for a long time. The suction diminishes the size of the thorax and collapses the smaller bronchioles and alveoli, thus lessening the exchange of gases while the movements of the thorax still simulate normal respiration. Air is frequently forced into the stomach and may cause movements which simulate respiration, although actually no air enters the lungs.

The apparatus devised by Dr. S. J. Meltzer (*Jour. Am. Med. Assoc.*, vol. 60, 1913, p. 1407-1410) is of far more value than the pulmotor or the Dr. Bart device. It is simple, light, and inexpensive; it is free from sucking action; it can deliver pure oxygen—a possibly important consideration in gas cases; and it embodies in a form that can be used by laymen a principle of artificial respiration that has been employed in laboratories for many years, and is known to be effective and free from danger.

"Industrial Conditions, Their Relation to the Public Health," by B. S. Warren (*U. S. Public Health Reports*, reprint No. 195), attacks the poor physical and hygienic conditions, long hours of labor, poor wages and irregularity of employment under which large sections of the industrial population exist. The responsibility, says Warren, rests equally upon employers, employees and the state.

The campaign for prevention of disease should include the following fundamental requirements:

First—Hours of labor which do not lead to excessive fatigue or cause damage to any part of the body.

Second—Regular employment at a wage sufficient to meet the cost of hygienic living and insure against sickness or other physical disability.

Third—Sanitary environment in the place of employment.

Fourth—Education as to methods of hygienic living and the importance of such living.

Investigation by the United States Public Health Service of the claims made on behalf of the Friedmann treatment for tuberculosis did not show either curative or protective properties in monkeys against tuberculosis. Animals treated with the organism developed as a rule an increased susceptibility against tuberculosis.

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4mo.	7 lb.	12	11	2	2	10
4mo.	5 lb.	15	18	2	2	10
5mo.	6 lb.	9	15	2	2	10
5mo.	7 lb.	12	11	2	3	10
6mo.	8 lb.	15	18	3	3	10
6mo.	7 lb.	18	25	3	3	10
6mo.	8 lb.	15	22	3	3	10
7mo.	9 lb.	18	25	2	4	10
7mo.	8 lb.	21	22	3	5	10
7mo.	9 lb.	18	20	3	5	8
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8mo.	11 lb.	24	24	3	7	8
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